MAY/JUNE 1997

PW

PRACTICAL WINERY & VINEYARD

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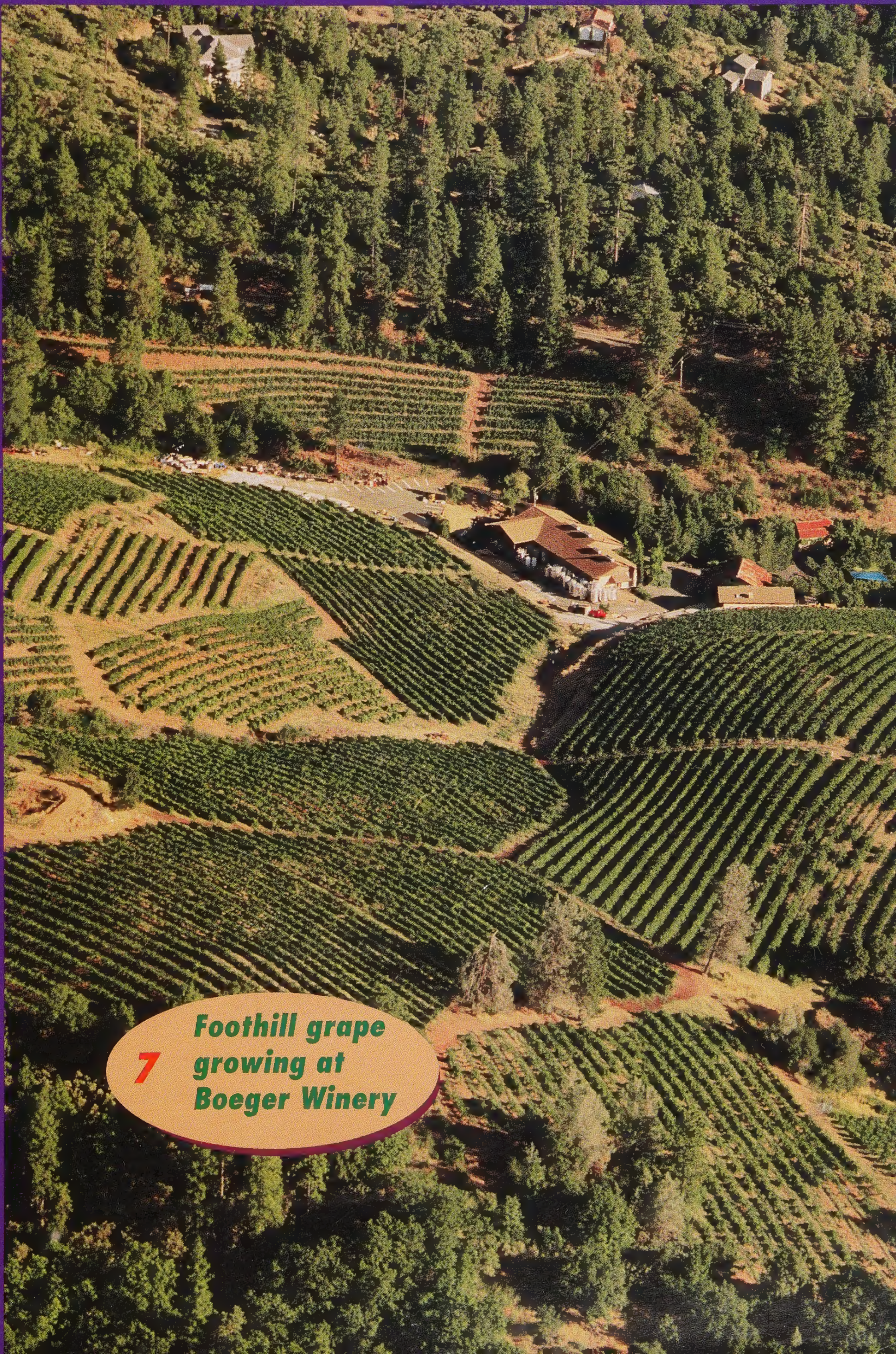

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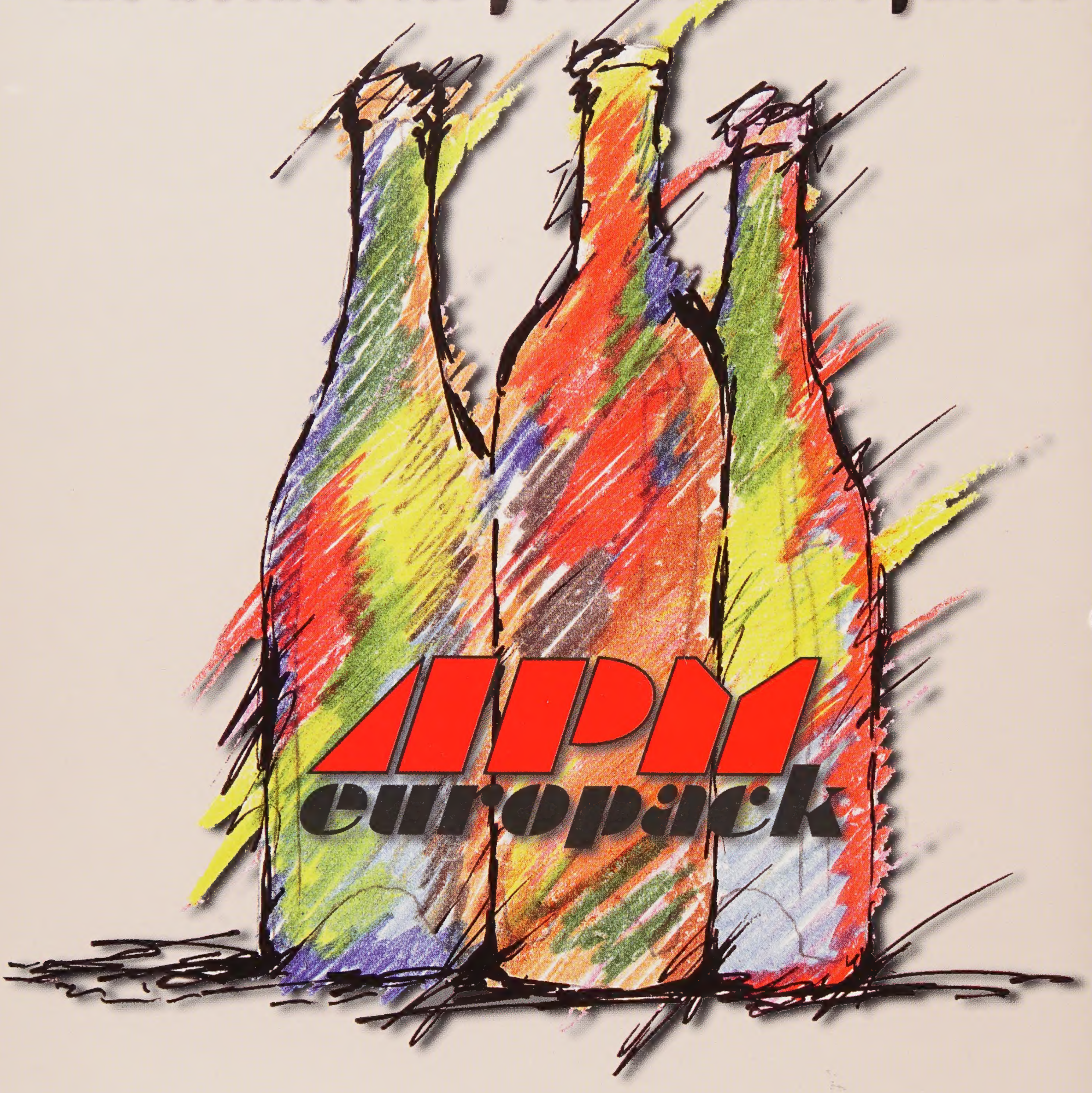

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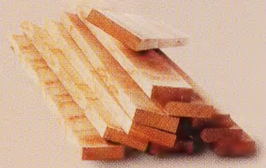

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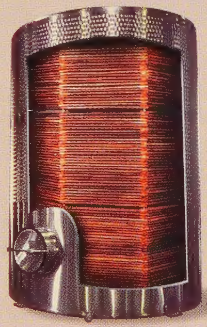

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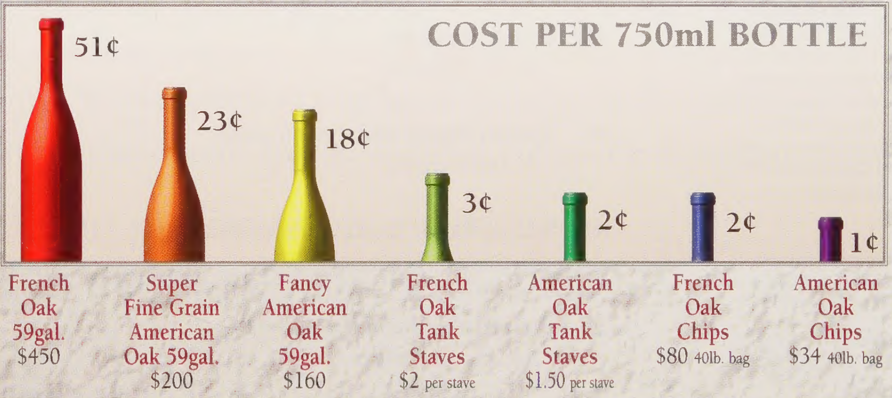

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PRACTICAL WINERY & VINEYARD (ISSN 9739-8077) is owned and published by D.F. Neel. Published bi-monthly at subscription rate of $31/year. Outside the United States, please add $10US, sea mail; $18US, air mail. Postmaster: Please send change of address to 15 Grande Paseo, San Rafael, CA 94903. Back issues: $5 prepaid. News media may use no more than 1/4 page of material per issue provided that PRACTICAL WINERY & VINEYARD is credited.

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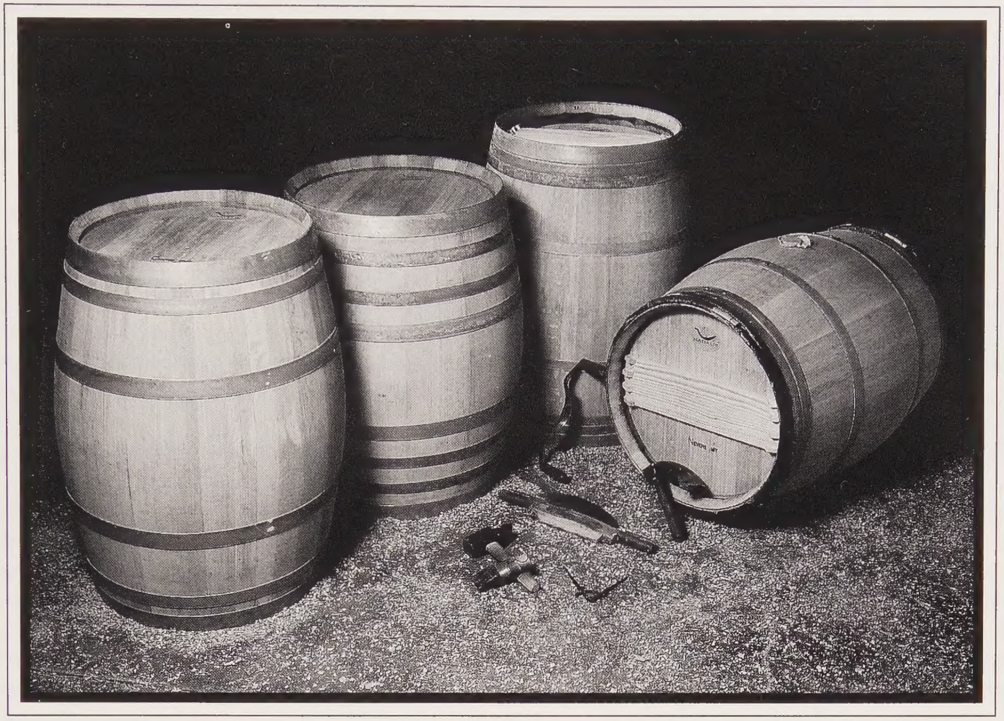

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by Eleanor & Ray Heald

Boeger excels at hillside grapegrowing

Boeger Winery's home ranch is a bowl-shaped, steeply sloped vineyard in the Sierra Foothills east of Placerville in El Dorado County, CA, reminiscent of vineyards planted outside Florence in Italy's Tuscan hills. Owner Greg Boeger excels at modern-era foothills grapegrowing.

A 1968 graduate of the University of California-Davis, Boeger earned a master's degree in agricultural economics with a minor in viticulture. He is the grandson of Anton Nichelini, founder in 1890 of the Napa County winery bearing the Nichelini name. Boeger is a partner in this family-owned and operated winery in Chiles Valley.

Early experience at Nichelini honed Boeger's skills, and then he established Boeger Winery independently in 1972. It was the first modern-day facility in El Dorado County. The site is the former Fossati-Lombardo Winery which was established in 1857 and had vineyards until Prohibition forced conversion to pear trees in the late 1920s.

Forty acres of pears were converted to grapes on the 70-acre home ranch from 1972 through the 1980s. The home ranch vineyard is divided into 15 irrigation blocks. Most vines are trained on bilateral cordon because that was the standard in the 1970s. "Rather than making a mass conversion to another system, we've been leaf pulling and crop thinning to augment training and trellising; that's been working well for us," Boeger explains.

Between the home ranch and two other properties he manages, Boeger grows 25 varieties on 75 acres. Of 15 red varieties, Merlot, Zinfandel, Cabernet Sauvignon, and Barbera are the principal grapes, followed by Cabernet Franc and Petite Sirah.

Plantings at Boeger Winery

The home vineyard, on steep hillsides in a Region-III climate, is between 2,100 and 2,300 feet elevation. Original plantings on a 30° slope include Chardonnay, Sauvignon Blanc, Semillon, Cabernet Sauvignon, Merlot, and Zinfandel.

Peek and Ritchie vineyards, under long-term lease, augment Boeger's grape supply. At Peek Vineyard, between 2,900 to 3,000-ft elevation, Chardonnay, Sauvignon Blanc, and Johannisberg Riesling were planted on cooler east-facing slopes in 1978. More southerly west-facing slopes were planted to Bordeaux varietals and Tempranillo, and these grapevines do very well.

Over the last several years as interest in Rhone and Italian varieties has grown, some original plantings at the home ranch and leased vineyards were ripped out and replanted or grafted to Syrah, Grenache, Mourvèdre, Sangiovese, Nebbiolo, and Refosco. Tempranillo, Garnacha, and Graciano with Spanish origins are among the newer plantings.

Boeger is propagating an old Zinfandel clonal selection from some original pre-Prohibition vines still on the property. Bordeaux red varietals are being increased with expanded plantings of Cabernet Franc, Merlot, and Petit Verdot.

The 20-acre Ritchie Vineyard was planted to Barbera in 1965. Vines are own-rooted and head-pruned. Boeger describes the eight-foot, then 12-foot, and back to eight-foot row spacing established to accommodate the terrain, as "weird, but very workable."

Most plantings at the home vineyard and Peek Vineyard are on AXR-1 rootstock, but Boeger is not concerned. "The beauty of El Dorado County is that it is not contiguously planted, and if there is a phylloxera infestation somewhere, the likelihood of its being transported here is minimal."

Newer plantings such as Sangiovese have been on 110R rootstock. But on tough sites such as rock outcroppings, Boeger now believes that he should have chosen an even more vigorous rootstock.

Estate and leased vineyards provide about 90% of the winery's annual grape needs for a 70% red, 15,000-case production. Approximate gross annual tonnage picked at the three sites is 250 tons. The only significant grape quantity Boeger buys is Walker Vineyard Zinfandel. Boeger believes a winery this size is manageable as a hands-on, small-batch production facility.

As a rule of thumb, bloom is 90% complete between mid- and late-May at most Boeger vineyard sites. However, at the 3,000-ft Peek Vineyard, it can be early June. Some early reds are harvested in the first week of September, but the peak hits during the third week of September. In some years, Barbera is picked as late as November.

"Having a number of varieties in different locations allows us to turn our red fermenters more than once," Boeger explains. "We can also use 1,000 to 2,000-gallon tanks well. We bring in small two-acre blocks because, as an example, Cabernet Franc in two different locations matures at different times."

Issues in hillside grapegrowing

"Elevation is the critical factor when growing grapes in mountain foothills," says Boeger. "The higher the elevation, the cooler it gets. Within this concept are slope and exposure, and I believe almost any variety can be grown here on the proper site with correct exposure. In general, reds belong on the south and western slopes and whites on the north and east.

Greg Boeger

"The slope of the terrain, more than the ideal sun exposure, dictates how the rows will be oriented. Which way the tractor works best and which way you get the longest rows or fewest point rows are primary considerations. Every little slope or change in land contour dictates doing something different.

"To plant a hillside well, you have to get out on a caterpillar and disk to figure out what makes sense. The way you naturally disk offers the biggest clue. That's what you have to live with once you've got vines in the ground."

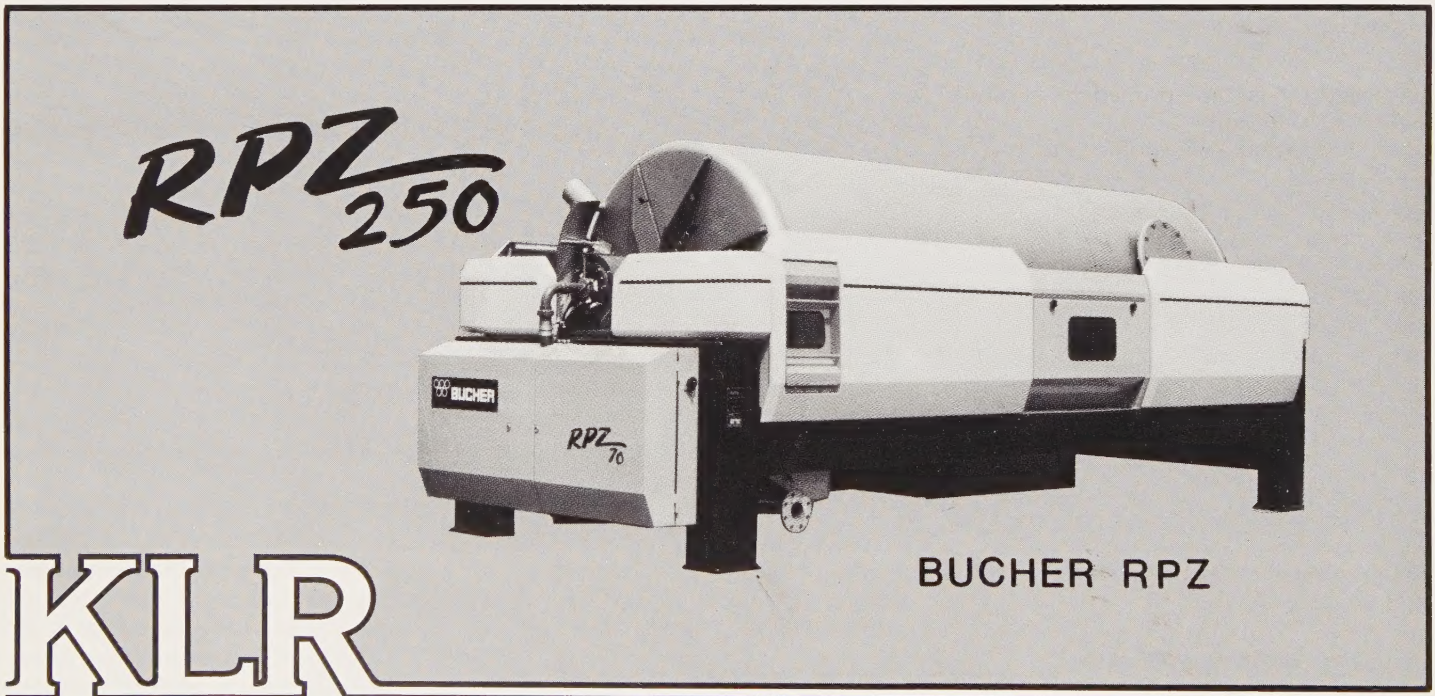
Home ranch

While surveying his estate vineyards with ***PWV*** by jeep, Boeger reiterates his vineyard philosophy. "Planting is dictated essentially by terrain and contour of the slopes." He points to a long south/southwest exposure slope on which Merlot is planted with north-south oriented rows. "This is ideal. However, I don't claim that everything is ideally planted.

"For example, we have a block of Cabernet Sauvignon on some lower ground with deeper soil that should have been planted on a higher site with poorer soil where instead we planted Zinfandel with St. George rootstock. At the time, I didn't realize that the soil was so shallow; Zinfandel, a weaker vine, really struggles there while a few Cabernet Sauvignon interplants are doing just fine. In hindsight I would have reversed the plantings."

In replanting today, Boeger is careful to put more vigorous varieties on poorer slopes and allows less vigorous varieties to profit from better soils.

One long, narrow slope where tractors could not cultivate safely is ter-



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raced. Boeger claims that this is the only condition under which he would create a terrace. "What you're really doing is digging in on one side while losing a lot of ground on the other. The inside [of the terrace] has poor soil (tractor cut), while the outside is good (fill), and variations in vine growth are created.

Following contour and soils, one finds an interesting mix of plantings at Boeger — two rows of Viognier, four rows of Grenache. Mourvèdre disappears from view over a rise. Then there's a parcel of Cabernet Franc, and another of Tempranillo and Graciano.

"We've grafted to create small blocks of different varietals to see how they'll do," Boeger maintains. "We're now grafting or replanting to varietals that interest me and choosing soils and contours I believe will work best. I'm not committing to large blocks yet."

Erosion problems in the home vineyard have been corrected with aisle planting of a natural cover crop that is mowed.

Boeger is happy with the looser bunch, small berry, clonal selection of Cabernet Sauvignon planted in 1972. He praises it for its intense, elegant fruit. Unlike most other varieties grown at Boeger, it is cane-pruned to allow better sun exposure.

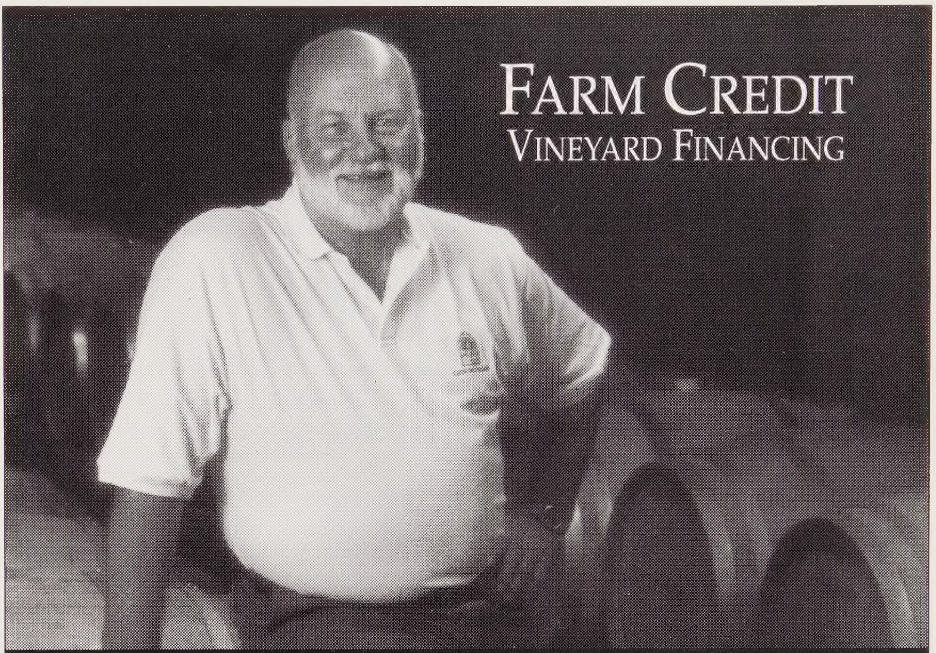
Refosco was grafted onto French Colombard roots in 1990. It goes into a proprietary Italian blend named Migliore in the Boeger "M Series" consisting of Meritage ($15/bottle), Migliore (Italian), Milagro (Spanish), and Majeure (Rhone). Migliore ($13.50/bottle) also contains Barbera, Zinfandel, Nebbiolo, and Sangiovese.

"We are just learning about Refosco," Boeger adds. "Like Charbono, it wants to drop basal leaves in late August and not attain higher sugar levels, so we don't do any leaf removal. It also overcrops, and we've been dropping at least 30% each year." However, with all its problems, the variety does achieve great color and flavor with careful management.

Cabernet Franc is grown in four different blocks on the home ranch. They all mature at different times and have decidedly unique taste profiles. "Ideally, we should not have planted Cabernet Franc in one site at the bottom of a slope because, at night during the growing season, it can be 10°F colder there," Boeger notes. "But we just let it hang for about three weeks after the other blocks are picked, and it eventually gets ripe."

Small blocks of Syrah, Grenache, and Mourvèdre go into the "M Series" Rhone blend labeled Majeure. With low-color Grenache, Boeger recommends greater sun exposure and crop reduction to increase intensity.

A 200-case lot of a "test" varietal is the minimum quantity the winery bottles separately except for a 100-case lot of Charbono. Small case lots are sold mainly in Northern California and through the tasting room creating 25% to 30% of total sales.



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Boeger considers Chardonnay viable in El Dorado County. It may not be the ideal place, he admits, but he credits other producers such as Lava Cap for doing a good job. "The Boeger style of Chardonnay is not big and buttery," he maintains. "We have a market for it, because our focus is a crisp, lean style."

Boeger Chardonnay is a blend of wines made from home vineyard grapes grown at 2,100 ft. elevation and Peek Vineyard grapes grown at 3,000 ft.

At the Peek

Although Peek Vineyard (20 acres) is a cooler site than the home vineyard, Boeger puts theory into practice by planting Cabernet Sauvignon on the parcel's warmest southwest slopes. Petit Verdot is in nearby blocks along with Cabernet Franc and Merlot — all face south, southwest, or west. As the slopes turn north and east and elevation rises, though there's little soil variation, he planted Chardonnay, Sauvignon Blanc, and Johannisberg Riesling.

Peek Vineyard soil is deep Aiken clay loam which is volcanic in origin and is one of three basic soil types found in El Dorado County. In this soil, vines have significant vigor.

Boeger uses overhead sprinklers in Peek Vineyard for several reasons, not the least of which is high elevation and frost vulnerability. Six-inch diameter main pipelines provide abundant water for frost protection during early vine growth in April. Boeger also uses this system for vine irrigation during the main growing season. Four neutron probes detect water status and are monitored by the El Dorado County Irrigation District, which provides a print-out within 24 hours after the probes are read.

"We've not had mildew problems with overhead irrigation," Boeger maintains. "I like it because I can manage the vineyard better. If I want to disk, I can irrigate ahead of time to reduce dust. Or if we disk and want to get the dust off the vines to prevent mite problems, we can do that, too. If sulfur is used, residuals can be washed off. We've not had a water shortage that would force us to drip." In the future, Boeger may put drip in some vineyards, however, because of its own set of advantages.

Some Peek blocks have highly erodible soil, so a cover crop (native grasses) was developed in the aisles and mowed three times during the growing season.

Several rows of Sangiovese, Tempranillo, and Tannat have been planted in the Peek Vineyard as experiments. Boeger works with some skilled amateur winemakers who take these grapes, make the wine, and then return samples. Though plantings of Tannat in France (Madiran appellation in the southwest), for example, are on the decline, Boeger finds the grape impressive.

Tempranillo contributes to the "M" series Spanish blend called Milagro

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(unreleased). Milagro is a blend of Tempranillo, Graciano, and Garnacha — all of Spanish origin. From Spanish, Tempranillo translates loosely as "little early ripening one," and the grape performs true to its name. Graciano and Garnacha are grown on the home ranch. The blend of the lighter-bodied Tempranillo and heavier Graciano is pleasing to Boeger. In order to accommodate Tempranillo, Johannisberg Riesling was grafted over.

Petit Verdot, planted 8x12 on the site, is subject to mildew because of its heavy canopy. Boeger has the canopy opened on top, ideally right after set, to permit dappled sunlight.

"The major problem with opening the canopy is sunburn on a few bunches, but it's not serious," Boeger explains. "We've not cleared out the bottom, although I've thought about it since Petit Verdot has a tendency to grow downward. However, I'm concerned about sufficient leaves for photosynthesis. There's no fruit down there, so I don't understand how retaining the leaves harms anything. For this variety on this site, we only leaf pull and don't trim."

Due to its more upright growth, the Cabernet Franc canopy has also been opened more to direct sunlight. Care is taken to clean out leaves around clusters for good airflow in addition to sunlight penetration.

No effort is made to balance in relation to pounds per vine or any other numerical estimate. "We look at general vine health," Boeger states. "I go by intuition and what I think the vine can hold. I teach the vineyard crew of seven, that has worked for me many years, to break up big clusters of bunches, so nesting does not occur. We leaf-pull and drop crop later with Cabernet Franc because early on it's hard to tell which bunches are going to nest with that variety."

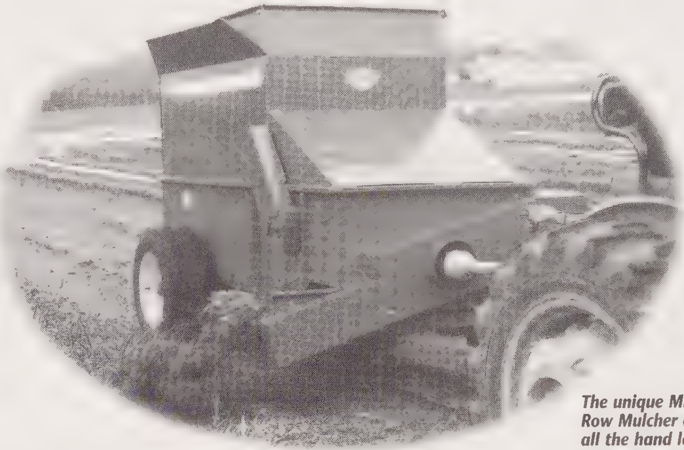
The same clonal selection of Merlot that's part of the original planting on the home ranch has been grafted onto Sauvignon Blanc vines at Peek. Boeger prefers this selection over another planted on the home ranch in the early 1980s because it has looser bunches and sets more consistently than is typical for Merlot.

On east-facing slopes, Chardonnay ripens later and is harvested in late September and early October. The clonal selection of unknown origin is a moderate producer yielding four to five tons/acre (TPA) without thinning, and occasionally achieving six TPA.

Sauvignon Blanc is planted in some east-facing blocks. In order to ripen without green flavors, vines are heavily leaf-thinned.

Barbera from Ritchie

Thirty-year-old, head-pruned Barbera vines at Ritchie Vineyard (20 acres) are the oldest vines that Boeger farms. There are no signs of impending replanting due to vine age. Boeger believes that since he took over management of the vineyard, vine health overall has improved, but even before then, he says



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the marginally managed vines were producing excellent fruit due to low yields and good sun exposure.

Fertigation, cultivation, weed control, and irrigation have all combined to increase yield. However these practices have also increased vine vigor and hence more canopy. Therefore, in order to maintain or increase grape quality Boeger has decided to do leaf and shoot removal as well as cluster thinning.

The Ritchie Vineyard Barbera bottling sometimes includes up to 10% Zinfandel grown on the home ranch. The grapes are generally allowed to ripen to higher sugar levels (24° to 26° Brix) to allow the naturally elevated acid levels to soften. The resulting wine is usually big and concentrated with moderate acidity.

Zinfandel

Boeger Winery produces two Zinfandels, one labeled El Dorado through 1994 and Estate from 1995 on, and the other Walker Vineyard. The El Dorado bottling originates from the home ranch, and it is a different clonal selection from that planted at Walker. In Boeger's opinion, their distinctly different character requires separate bottlings.

"Since we've been fine-tuning Zinfandel from our own vineyards, differences are even more dramatic," he maintains. "Getting the crop level down to three TPA and doing extensive leaf pulling has made a dramatic difference in fruit quality."

Zinfandel vines are principally head-pruned. They are leaf-thinned and cluster-thinned with "shoulders" clipped off to open up the bunch. Removing shoulders is important because they harbor green berries underneath. Maintaining about one cluster per shoot also reduces the crop load and improves even ripening of bunches.

Boeger says the head of a Zinfandel vine should be like a wagon wheel. Spurs and arms should not come out from the center one on top of the other, but should radiate out like spokes on a wheel. Arms should be positioned outward and somewhat up. Second crop is either dropped or not picked. "While we talk about second crop being a problem with Zinfandel, a second crop is the one salvation should Zinfandel get frosted," Boeger notes.

In the early 1990s, cordon-trained French Colombard vines on the home ranch were grafted to Zinfandel. The original training system was left in place, and Boeger believes this Zinfandel does equally well as head-pruned vines in other blocks. While he says this, he notes that the clonal selections are different, and that may be a significant variable. But on the positive side, he views multiple clonal selections as another blending component.

Zinfandel from Lloyd Walker's vineyard in El Dorado County is known for its even quality and full-bodied character. It is located near Boeger Winery at 2,100 ft. elevation. Thirty-year-old vines are considered to be in their prime, yielding four to 4.5 TPA. Boeger attributes the larger crop level at Walker to a deeper and better soil profile.

Each year, Boeger uses most of the Zinfandel from the Walker Vineyard, about 30 to 40 tons. Because the grapes are uniformly good, they generally all make it to the vineyard-designated bottling. Around 5% Petite Sirah from Boeger's estate vineyard is added to intensify the wine's color, spicy-peppery characters, and to add depth. In years to come, newly planted Petite Sirah in the Walker Vineyard will probably be the source of the blending component.

El Dorado Zinfandel is also blended with Petite Sirah from the same source plus an additional 5% Barbera from Ritchie Vineyard.

In summary

"Making a success of hillside grape-growing depends on how vines are treated and how well a grower matches clonal selection of a varietal to the soil and land contour," Boeger concludes. "Growers must recognize that what may be a good clonal selection for one site will not necessarily be good in another." ■

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AN INNOVATIVE APPROACH TO QUALITY CORKS

Good intentions on the road to hell

by Patrick Campbell,
Laurel Glen Winery, Glen Ellen, CA

[1] As most American industries march resolutely toward the millennium, creating ever more efficient and economical mechanisms to get goods to consumers, the wine distribution industry adheres jealously to the status quo.

[2] Is there any other industry which so assiduously (and sanctimoniously) represses innovation in the marketplace and resists the forces of deregulation?

Because the 21st Amendment, for all intents and purposes, exempted the distribution of licensed beverages from the influence of free market forces, it should come as no surprise that the amendment has been used to justify an astounding amount of legislation designed specifically to ensure protection from competition under the guise of looking out for consumer well-being.

[3] In contrast with most industries, which chafe under the yoke of governmental regulations and legislation, many factions within the wine industry have worked hard to promulgate laws that preserve the status quo and which have resulted (intentionally?) in a concentration of power horizontally within the three tiers.

[4] Is this too harsh an observation? Perhaps. But consider the evidence: No winery-direct sales to consumers across state boundaries: no common ownership of retail outlets, wineries, or distributors; valuable exemptions from tied-house prohibitions; threats of license revocation and even felony sanctions for unauthorized shipments.

[5] All are the result, direct or indirect, of wine industry influence, and all are in a continual state of massage by power-brokers to suit their needs of the moment. Let us not forget the granddaddy of industry-promulgated special interest: franchise laws.

[6] Franchise laws appear — at first blush — to serve a reasonable purpose: to protect the rights of a franchisee against the arbitrary actions of the franchise holder. For example, franchise laws protect mom and pop's ownership of a fast food outlet from harassment and unreasonable termination by the franchise holder.

[7] In the wine business, this relationship is turned on its head; here, the dominance of the mighty distributor over the supplier is all but guaranteed by the franchise laws of the state. Normal franchise law, in true Constitutional fashion, seeks to ensure the rights of the weak against the tyranny of the strong. Wine franchise law, in contrast, guarantees that the dominance of the distributor is not threatened by the exercise of freedom of his individual suppliers.

[8] Wholesalers might be tempted to respond that they are the functional equivalent of mom and pop; their relationship with the supplier is as tenuous as the supplier's whim and should thus be protected. The comparison is, however, disingenuous, though widely trotted out by wholesalers to justify tougher franchise laws.

[9] If mom and pop's franchise agreement is abrogated, mom and pop are flat out of business. They can't continue on their own, because all their marketing and retailing strategies are property leased from the franchisee. No lease, no franchise.

[10] The relationship between the wine wholesaler and supplier is, on the other hand, entirely different: Wholesalers do not sell franchises, establish pricing, or control the marketing of the supplier's brand. Nor does their business necessarily fail if a supplier pulls out.

[11] You wouldn't know this by looking at the franchise laws of some states, however! In an arrangement reminiscent of indentured servitude, distributors in Massachusetts and Georgia (the most egregious examples of franchise legislation) enjoy absolute control over their brands. In other states distributors may unilaterally determine pricing policies and preside over whose wines get sold and whose don't, all under the sanction of state law and all in apparent contradiction of the spirit of anti-trust legislation and free trade.

[12] Thus, although wine industry franchise laws come in many shapes and sizes in the 24 states that have enacted them, all ensure that the relationship between supplier and distributor remains as one-sided in the favor of the distributor as possible.

[13] A personal story may serve as a good illustration. Some 10 years ago, a prestigious distributor in Georgia called my winery, asking could they represent Laurel Glen wines in the state? For a couple of years, they did a creditable job; then for some reason they ignored our brand and the wines became, for all intents and purposes, unavailable in the state.

[14] Other distributors, unaware that we "had" a distributor in Georgia (so pathetic was their distribution), called to ask if they could represent us. But because of the state's franchise law, we could do nothing; unless our distributor decided to give up his control over our brands, we were stuck with him. Basically forever.

[15] Some three years later, after reasoning, petitioning, and threats of lawsuits had failed to change their minds — and after our marketing presence had atrophied in the state — our distributor agreed to trade Laurel Glen wines for the portfolio of a prominent Italian producer, which was at the time indentured to the distributor with whom we wanted to work. The swap was made. Our original distributor — so we understand, has since relegated the Italian line to the same limbo in which we languished for so long. Our sales in Georgia, by contrast, have risen from a couple of dozen cases a year to thousands.

[16] Who gained from this all-too-common misadventure? The original distributor, who, while keeping a potentially viable brand out of the hands of his competitors, treated it as an asset to be traded away when an opportunity arose. Relieved of any threat of "pulling the brand" and exempt from

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any meaningful pressure by the winery to improve the situation, the distributor simply treated our brands as a personal possession — which is, as a slave was to his owner, exactly what they were.

[17] Who won? Hard to say. Who lost? The consumers, retailers, and restaurateurs of Georgia, not to mention our winery. While no one denies that the relationship between the large distributors and their state legislatures has historically been, shall we say, friendly, franchise laws were not passed solely to secure the cynical advantages for distributors I have noted.

[18] Like the road to hell, the path of franchise law was paved with a good intention: to protect distributors from the gratuitous and reprehensible game of "musical distributors." For all the tales of wineries disappearing into the black hole of a distributor's portfolio, there are surely tales of distributors who have helped launch, build up, and eventually establish a brand, only to have the winery decide to move to another distributor, often for no more than just the hell of it.

[19] Many are the small, conscientious distributors who built up a brand from nothing, and lost it to a large distributor. Should their investment in the brand not have been protected in some fashion? Should not the equity they helped accrue for their wineries be recompensed in some way, if the wineries decide to replace them?

[20] This other side of the equation has not gone unnoticed by some of the more reasonable voices in the wine producers' community. Clearly, there should be some middle ground between unactionable negligence on the part of the distributor and unactionable lack-of-allegiance on the part of the winery.

[21] In other industries, a well-drawn contract protects these mutual rights, and state legislatures need not (and do not) get involved. If a form of liquidated, negotiated damages — based on performance standards — for the termination of a distributor was included in producer/distributor contracts, perhaps realistic and fair middle ground could be achieved.

[22] The above thoughts come to mind with the recent announcement of the Washington Beer & Wine Wholesalers Association's (WBWWA) proposal to beef up that state's franchise laws. Marching resolutely into the past, this group of mostly large distributors proposes, among other things, that all wineries producing 300,000 gallons or more annually are proscribed from changing distributors except for "cause" and at the cost of the "fair market value of the distributorship," to be determined by a judge, who may or not have any knowledge of the wine business.

[23] Other provisions include no dual distributors within a territory; the same distributor for all brands and extensions of brands, past or future, regardless of suitability, and even if the brand is sold; no necessary consideration by the distributor for the price-point marketing strategy of the producer.

[24] Many distributors in Washington are licking their chops over the prospect of this legalized vassal/serf arrangement, and if the friendly relationship between distributor and legislature is as strong in that state as it is around the country, they have little reason to bate their breath over its chance of passage. Wineries would be well advised to alert their distributors, the WBWWA, and the Washington Wine Institute as soon as possible of their distaste for these strong arm tactics before the idea gains yet another foothold and spreads even more widely. ■

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THE WINE LAWYER

by R. Corbin Houchins

That's where the road leads, all right, but about those intentions ...

I hope every **PWV** reader pays close attention to what is troubling Patrick Campbell in *Free Run* (page 14). I will devote this column to a forum-style commentary on the points he makes, from the perspective of one who works daily with the effects of special interest distributor legislation.

The [numbers] in brackets below correspond to the numbers of the paragraphs of *Free Run*.

[1-2] For many years the prevailing interpretation of the 21st Amendment, based on an important series of mid-1930s Supreme Court decisions, indeed exempted alcoholic beverage distribution from market forces. Happily, the 21st Amendment as presently understood does not do so, although legal scholars are still debating how far we have come from Depression-era liquor law. I am hopeful that a state distributor law that would be invalid for shoes or television sets because of conflict with federal antitrust law or with the interstate commerce clause would also be invalid for wine. The zinger is that laws can be very unfair without being invalid.

[3] The middle tier of the industry is indeed concentrated and is rapidly becoming even more so. At the same time, concentration at the supplier tier remains remarkably low. The result is enterprises in a highly competitive environment selling to a dwindling number of enterprises that stand at a turnstile of commerce. In economic terms, surviving distributors constitute oligopsonies or monopsonies, ultimately able to dictate terms to all suppliers except owners of the most highly prized brands.

Much of the anti-commerce legislation Campbell cites represents an effort by wholesaler organizations to retard the pace of middle tier concentration, for the benefit of those who are not sure they will be among the survivors. Clearly, large suppliers are better able to withstand the ill effects of the legislation, but in the wine industry, as distinct from brewing, the majors are not responsible for encouraging it.

[6-17] We're talking about real franchise laws — not the so-called "franchise" laws that apply only to licensed beverages — when we say they appear even superficially fair. There is no real relation between franchise laws and special interest protective legislation for the middle tier. What passes for franchise legislation in the wine industry is just a power-grab made possible by local political conditions arising from the fact that some key distributors receive a lot of money from the legal turnstile they have been given by statute and, with little competition to contend with, have the time to make friends with the legislators who maintain and extend the boondoggle.

[18] I have never seen a wine supplier play a "gratuitous and reprehensible game" with its distribution network. It's the wholesaler public relations line to make legislators and industry members think there is an evil against which the protective legislation is a remedy. Purchasers who decide, for whatever reason, not to have written agreements are already adequately protected from unreasonably short notice of termination of supply. Suppliers, by the way, are not so well protected. In the real world distributors can stop working for any wine supplier at any time for any reason without notice. It is a rare contract that makes much of a dent in that significant economic reality, other than by letting a supplier that is wholly or partly abandoned by the distributor start selling to someone else.

What's really going on is a frequently successful attempt to close the market by statute to suppliers who will not accept grossly unfavorable terms, including terms that require an expensive court battle over what is "reasonable." Given the secondary and tertiary costs of distributor changes, suppliers do not object to commercially reasonable specific notice periods for termination of the relationship. The right to change on agreed notice because of personality differences or for gut feel business reasons (smart or not), without having to articulate the rationale in court, is not whimsical or "for the hell of it," but a necessary flexibility in as sensitive a relationship as is handling the fortunes of a brand.

[19] Another pernicious myth is that distributors "build a brand" in a way that is analogous to making an investment in a franchise. I greatly admire the value of enterprises that will buy goods bearing an unknown trademark, talk them up, sell them at a profit, and thereby create wealth for themselves, their employers, their suppliers, the tax-gatherer, and other players in the economy. Building sales in the distributor's locale benefits everyone, and many conscientious distributors, large and small, deserve every penny of their markups. If they want more than the profit on sales for their efforts, they have the right to specify it in the distribution agreement. However, unless they negotiate true franchise agreements, they are not franchisees and do not build a monetary interest, legal or "equitable," in the tanks, vines, trademarks, vehicles, or other property of the winery by virtue of conducting their businesses.

[20] Allegiance is something you give to a higher power. A supplier-reseller relationship is not between a serf and the lord or a citizen and the sovereign. It is a commercial relationship that can, and in the case of brand name products usually should, involve rendition of services in addition to supply of goods, subject to terms and conditions spelled out in an agreement between parties that are equally able to walk away from the offer of a bad deal. Once a deal is struck, the obligation of each party is not to "be loyal," but to keep his or her promises.

Any distributor can specify the terms on which he or she will take on a brand going in. They can certainly negotiate compensation (usually a fee based on case sales) for the supplier's discontinuing sales without a breach on the distributor's part before they buy any of the product. The story of excesses by wine suppliers has the traditional function of big lies, which is to hide the ball.

[21] Right on. It's not unreasonable for a distributor to attempt to negotiate any of these benefits. What is outrageous is writing them into statute, one size fits all.

[22] Again, Campbell has hit the nail on the head. A law that results in economic punishment and taking the brand hostage unless a necessary business decision is evaluated after the fact as "reasonable" by a judge or jury is utterly different from adopting reasonable specific terms in a contract. Most judges and virtually all juries will have to be educated about the business environment of any commercial dispute, often at a cost exceeding sending them all to college.

[24] The chops-licking in Washington state seems to have been postponed, as it now appears the wholesalers' bill was not introduced by the 1997 legislative deadline. They'll be back. Meanwhile, the attempts at legislative muggings continue in other states.

Late news on trade dress

Recently a jury in California found that the Gallo Turning Leaf package did not infringe Kendall-Jackson's rights in its Vintner's Reserve trade dress.

The verdict shows that on a given day a properly instructed jury hearing a well-argued case can distinguish between similarities that are part of aggressive but non-misleading marketing and similarities that are likely to confuse consumers as to the source or sponsorship of the product. Only the latter constitute infringement.

Whether to get close enough to a litigious competitor's package to cause a court to give the question to a jury depends on the individual winery's risk-benefit analysis. Kendall-Jackson's argument was clearly not so far-fetched as to expose the company to payment of Gallo's attorney fees, and an appeal by the unsuccessful plaintiff would keep both parties' expenses running. Any name selection or package design that appears targeted at a competitor deserves discussion with your legal and insurance advisors. And don't forget how it might play with your lender or the underwriter of that long-planned IPO. ■

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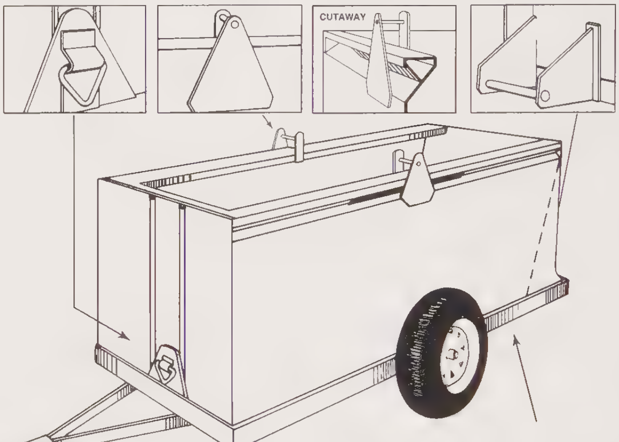
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Field performance of Zinfandel, Primitivo clones in a warm climate

by James A. Wolpert, chair,
Dept. Of Viticulture/Enology, UC Davis

Zinfandel was one of the first varieties to be highly regarded for production of red wine in California,[6] achieving that reputation by the late 1800s. Today, Zinfandel is the state's leading red winegrape cultivar with more than 33,900 bearing acres,[8] producing more than 280,000 tons.[2]

The origin of Zinfandel in the Old World is unknown, and how it was introduced into California is a matter of some dispute. What is well accepted is that as early as 1830s, Zinfandel was grown in greenhouses in the eastern U.S. for use as a table grape.

Recently, DNA fingerprinting ended some of the historical uncertainty by showing that Zinfandel is closely related, if not identical to, the variety Primitivo of southern Italy.[3] However, it is unlikely that Zinfandel's name will be changed to Primitivo, in part due to speculation that a progenitor for both varieties exists in Eastern Europe.[6]

The available clones of Zinfandel that are virus-tested and certified have not been highly regarded in the wine industry. Winemakers report that these clones have large, tight, rot-prone clusters with large berries, poor color and little varietal character. It has not been clear, however whether all the certified Zinfandel clones share these characteristics, nor whether Zinfandel differs substantially from Primitivo.

A short report by C.J. Alley was unclear on the extent of differences among Zinfandel clones.[1] The trial reported here is the first thorough attempt to examine all certified clones of Zinfandel, comparing them to the one certified Primitivo clone. This trial is part of a larger project to characterize clones of coastal winegrape varieties,[11] including differences among clones of Chardonnay,[12] Cabernet Sauvignon,[13] Sangiovese,[14] and Pinot Noir[15] for sparkling wine.

Materials and Methods

The trial site was located about one-half mile southeast of Arbuckle in the Sacramento Valley of California. The area is described as Region V, with more than 4,100-degree-day heat units (base 50°F).[10] Vines were spaced 7x11 ft (vine by row), which is 566 vines per acre.

Vines were trained to a T-trellis, with a lower wire at about 42 inches above ground and two parallel upper wires at about 62 inches high and 24 inches apart. Vines were trained to a bilateral cordon on the lower wire and spur-pruned. Spur number per vine varied somewhat from year to year (from 14 to 18 spurs per vine), but within a year was consistent for all clones.

The vineyard was clean cultivated by means of mechanical tillage in the row middles and under the vines. Supplemental irrigation was provided by a drip system. The trial was located within a commercial Zinfandel vineyard operated by Sutter Home Vineyards. Other cultural practices were typical for winegrape vineyards in the area.

The trial was planted in May 1988 on Harmony rootstock with certified green-growing benchgrafts produced at a commercial nursery.

The design was a randomized complete block with 10-vine experimental units and five replicates. All the certified selections of Zinfandel and Primitivo available from Foundation Plant Materials Service in 1988 were used (Table I). Zinfandel (ZIN) 6, a heat-treated selection of ZIN 1A, was included to test whether heat-treatment *per se* had any viticultural significance.

Vines were harvested individually, clusters were counted, and vine crop weights were measured. Prior to harvest, a 100-berry sample was taken per treatment replicate. The sample was weighed to determine average berry weight; berries were crushed, and juice was filtered through cheesecloth. Soluble solids was measured as °Brix by means of a hand-held, temperature-compensating refractometer. Juice pH was measured by laboratory pH meter. Titratable acidity was determined on a juice aliquot by titration with 0.1 N NaOH to pH 8.2 endpoint.

Results

Data from four years (1990, 1991, 1993, and 1994) have been averaged for all measurements. Data from 1992 were excluded from presentation because a prolonged heat spell at harvest resulted in substantial fruit shriveling.

Differences in growth and yield parameters among Zinfandel clones were few. The pruning weight of ZIN 1A was 0.2 kg less than other clones (Table II) while ZIN 1A and ZIN 2 had 7% lighter clusters than ZIN 3 and about 8% lighter berries than ZIN 6. No other yield component differed among the four clones (Table II). Differences in fruit maturity indices were significant but very minor (about 0.4 g/L acidity and 0.05 pH) (Table III).

Primitivo 3, however, showed a num-

Table I
Clone numbers and sources of Zinfandel (ZIN) and Primitivo from Foundation Plant Materials Service (FPMS), University of California, Davis

FPMS Clone #	Source	Heat treatment (days)
ZIN 1A	Handel 1V4	0
ZIN 2	Handel 1V6	0
ZIN 3	Ruetz #1	0
ZIN 6	Zinfandel 1A + heat treatment	117
Primitivo 3	P.I. 325696-A-1, Bari, Italy	59

Table II
Growth and yield components of clones of Zinfandel (ZIN) and Primitivo, Arbuckle, CA 1990-1994.[z]

FPMS Clone #	Prunings (kg/vine)	Yield (kg/vine)	Yield/acre (tons)	Yield: prunings ratio	Clusters per vine	Cluster wt (g)	Berries/ cluster	Berry wt (g)
ZIN 1A	1.9 c	14.2 a	8.8	8.5 a	41 b	375 b	184 a	2.05 bc
ZIN 2	2.1 b	15.2 a	9.5	8.7 a	43 ab	382 b	198 a	2.02 c
ZIN 3	2.1 b	15.1 a	9.4	8.2 a	41 b	409 a	197 a	2.12 ab
ZIN 6	2.1 b	15.2 a	9.5	8.6 a	42 b	400 ab	186 a	2.20 a
Primitivo 3	2.3 a	12.7 b	7.9	7.1 b	45 a	302 c	165 b	1.86 d

[z] Excludes all data in 1992 and excludes pruning weights in 1994.

Table III
Fruit maturity indices of clones of Zinfandel (ZIN) and Primitivo, Arbuckle, CA 1990-1994[z]

FPMS Clone #	°Brix	Titratable acidity (g/liter)	pH
ZIN 1A	20.4 b	7.1 b	3.54 a
ZIN 2	20.6 b	7.5 a	3.53 a
ZIN 3	20.3 b	7.3 ab	3.54 a
ZIN 6	20.2 b	7.5 a	3.49 b
Primitivo 3	21.8 a	7.4 a	3.55 a

[z] Excludes 1992 data

ber of differences when compared to the Zinfandel clones. Primitivo 3 had the heaviest cane prunings by a margin of 0.2 kg/vine. Despite having more clusters per vine, Primitivo 3 still had significantly lower yield by about 3-kg/vine, primarily because its clusters were lighter by nearly 100g, due to significantly fewer and lighter berries. Primitivo was also advanced in maturity by more than 1° Brix, probably a result of the lower yield and higher pruning weight.

Discussion

Zinfandel clones differed little in this warm region site, indicating that the desired viticultural characteristics of substantially looser clusters and smaller berries are not to be found among these clones. However, additional testing in cooler regions may be warranted to test the possibility that the clones may perform differently in different environments, as has been reported for Pinot Noir clones.[5]

Lack of viticultural differences among Zinfandel clones does not preclude the possibility that sensory differences could be found in wines. Paul Verdegaal and Craig Rous, who also reported small viticultural differences among certified Zinfandel clones, nevertheless found that a tasting panel was able to detect differences among clones.[9]

Clusters of Primitivo were observed to be looser than Zinfandel, a conclusion supported by the calculation of fewer berries/cluster (Table II) and borne out by preliminary measurements of cluster tightness (M. Vail and J. Wolpert, unpublished data).

Among Chardonnay clones, loose clusters were correlated with reduced incidence and severity of bunch rot (M. Vail, J. Wolpert, and D. Gubler, unpublished data). This suggests that Primitivo would have less rot than Zinfandel under conditions conducive to infection by Botrytis bunch rot or sour rot organisms, but further investigation is necessary.

Heat-treated ZIN 6 differed in minor ways from untreated ZIN 1A, particularly in pruning weight and berry weight (Table II). This supports the view of L.P. Christensen *et al* who found that thermotherapy accounted for some differences in yield components among clones of French Colombard and Chenin Blanc.[4]

Thermotherapy alone cannot account for all of the undesirable characteristics of certified Zinfandel, such as large clusters, because three of the four tested Zinfandel clones had no heat treatment at all. Rather, it appears that the clones were originally chosen for those particular characteristics. In the early years of the certification program, vines with good yield and well-filled clusters were selected because these were visual signs that the vines were free of severe viruses (A. Goheen, personal communication).

Federal regulation still recognizes Zinfandel and Primitivo as different varieties. Therefore, Primitivo should not be considered as a superior clone of Zinfandel.

Improvement of Zinfandel will have to be made through identification of better selections. With the diversity of Zinfandel vineyards throughout California, it is likely that desirable clones already exist, but have not yet been identified. Recent efforts have been made towards making new Zinfandel selections and results will be reported. ■

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The author would like to thank E.P. Vilas and M.M. Anderson for technical assistance and to acknowledge the excellent cooperation of Sutter Home Vineyards managers Todd Berg and Humberto Franco and former manager Clay Shannon. Thanks are also extended to Sunridge Nursery, Bakersfield, CA, for supplying benchgrafted planting materials.

Financial assistance from the American Vineyard Foundation is gratefully acknowledged.

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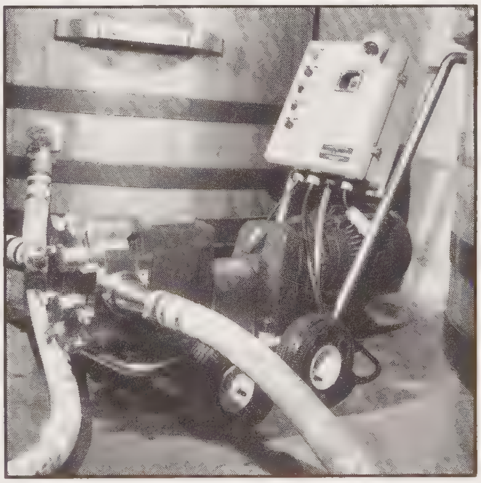

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Why winegrowing starts with people

"Wine growing starts with people." During the last few years, I have repeated this concept so often that it is starting to sound like a political slogan. Those same years have confirmed, though, how true it is.

There are many ways in which winegrowing starts with people, and most of them can be lined up in a continuum. But the overriding reason is that wine is consumed by people. A given vineyard or winery is successful because someone likes the wine it produces and is willing to pay a fair price for it. I don't know any exceptions to this.

No matter how strange or wonderful the combinations of parameters — the rock piles of Chateauneuf du Pape, the shale of the Mosel, the mists of the Sauternais, or the palm trees in California vineyards — as long as people's tastes vary over time, there can be no eternal definition of the best place to grow grapes. Volnay was once considered the best Burgundy, just as Vouvray was once one of the most highly prized of all French wines. Each of these is now one respected wine among many.

This evolution is not viticultural, it is psychological. Wine quality is entirely dependent on how we, as a group, define it at a certain moment. "We," in the most complete sense, is the consumer. Winegrowers are like chefs who bring out new delicacies for the consumer to sample and give a thumbs up or thumbs down.

Being the best

Our business is less apt to reward mediocrity than most lines of work, and it is a business in which we all have to give everything we have, at each level of the organization, just to keep up. But it is not possible for anyone to maintain a consistent level of superlative achievement.

Excellence is an ebb and flow that will stay at a high level only if it is consistently nourished throughout an organization. Most of the reasons that vineyards and wineries fall short of their potential are people issues, and the essential preliminary to growing the best grapes or making the best wine is having the best people and motivating them properly.

If you have the "right land" but the wrong people, they will mismanage the site. If you have the "right grapes" entering the winery, but the wrong people in the winery, they'll mess up the wine. If you bottle the "right wine" but have the wrong people selling it, you won't have long-term success. If you have the "right sales force," but through wrong pricing or other policies imposed on them, you direct the wine toward the "wrong consumer," you will fall well short of your potential.

A continuum of people

Winegrowing is like a pyramid with the owner at the top and the consumer at the bottom. In between are the winegrower/winemaker, the staff, the trade people who move wine to its final destination, and finally the consumers. I place them at the bottom of the pyramid because of their numerical superiority and because their input is at the end of the process. They are, however, the supreme judges of our efforts.

Owners

The life blood of the wine world has always been the owner's commitment of energy and resources. The owner hires, pays the salaries, and is the soul of the organization. You can perceive the owner in the nature of the wine. As Terance Clancy used to say, "You can taste the vibes."

If the owner is a selfish, arrogant schmuck, that will filter down to the consumer. The wine may be well-made, but it will fall short of its potential, because such an owner is unwilling to invest adequate resources, ignoring the fact that people and other quality ingredients are expensive. Another owner with no technical expertise may interfere in production, or an owner may create an oppressive work environment that yields an unhappy staff and rapid turn-over.

The winegrower

In this pyramid-shaped continuum, I put viticulture and enology together, so "owner" refers to either the proprietor of a vineyard or of a winery. Similarly, a winegrower can be a vineyard manager, or a winemaker, or both. He/she is the person whose day-to-day decisions have the most influence over the grapes or the wine.

The winegrower needs to be, above all, a team leader. I realize that in some small operations, he/she is the whole team, but the following concepts still apply.

The word "team" works better than "family" in the wine industry environment for two reasons. First, a team's purpose is to win, whereas a family's purpose is just to grow old together. Second, your family generally puts up with you, no matter how big an idiot you are, whereas, if you don't pull your weight on a team, you get cut.

As team leader, the winegrower's principal task is to put together and manage the elements necessary to produce the grapes or wine that will assure the reputation and success of the operation.

The most essential element in this effort is people. If they are well-chosen and motivated, they can correct any mistake or shortcoming within the organization. Often, a serious mistake or shortcoming in the organization is directly associated not with physical matters, but with building and motivating a team.

If your wine suffers from excessively long barrel storage, the wine itself can't fix that error. Only the winemaking team can correct the problem, because wine can't think. It may seem foolish to even bring this up, but we must take personal responsibility for everything that is wrong in our operations.

In an extreme example, when it becomes apparent that, no matter what changes might be attempted, the vineyard isn't capable of producing the "right grapes," it is up to the group sitting around the table to decide to get another vineyard.

It's not that the vineyard is bad, it's just that you are the wrong owner. The vineyard might be excellent for someone else. If you lack the money to buy another one, then that financial shortcoming is yours, not the vineyard's. In short, people are best able to fix problems when they realize that they are not only the solution, but the problem also.

Herein lies the root of the difficulty of being the best — you must look within yourself to identify and master your hidden weaknesses. This applies to the organization as a whole and to each individual, and it is all the more crucial when a person holds a position of influence.

As mentioned above, the nature of the operation is established with the owner, and everyone under him/her is a reflection of the owner's active or passive

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choice to bring that person into the team. On the technical end, all of this can be said about the winegrower, who ideally should have the right to hire and fire in production. (If he/she doesn't, then these concepts apply, but there is a blurring of roles. Such overlapping is very common in the real world, but minimizing it should be a goal of this whole introspective process.)

In production, the winegrower needs to be the standard bearer for "being the best," and should have the highest degree of self-awareness of anyone within the team. The winegrower must have an attitude of nurturing, protecting, and self-sacrifice toward the team. Winegrowers' primary focus must be on recognizing their own weaknesses and minimizing their harm to the team. He/she should encourage the same in the others, but the leader must bear the heaviest burden of self-evaluation. To achieve being the best, the leader must be a servant to the overriding mission and to the needs of the team.

A brutal business this process is. You look inside yourself, and you see flaws that have lingered since college or before, and they won't go away. Admitting them to yourself will help. (Sunshine is the best disinfectant.)

But if you do this sincerely, then your recognition of these flaws will be reflected in your exterior demeanor in such a way that you will, in effect, let those around you in on your secret. This is frightening in that one feels exposed and threatened. Those who are less forthcoming can feel safe in their layered psychic defenses, but their efforts to lead their teams will be undermined by their unacknowledged flaws.

Team leaders must remember that any mistakes made by their staff reflect on their own abilities as the hirer, teacher, motivator, and writer of work orders. When a team member makes a mistake, it's the leader's task to teach him/her how to keep from making the same mistake again rather than to blame. Team leaders should do everything in their power to create a safe, nurturing environment for their team. One that allows them to stay focused on their specific jobs. They should also serve as an example that encourages each person to be an unselfish member of the group. The unspoken emotion should be, "If the leader can put his/her job on the line to protect us from blame, then we also have to produce our best effort." Those who are insensitive to this thought are dead wood.

The leader who wrestles daily with his/her own shortcomings is best able to understand the foibles of others. It is wise to hire people whose strengths are complimentary to one's own. Moreover, if the leader's strengths cover the flaws of the group, he/she must be actively aware of that need, and then make it invisible to the outside world.

Leaders must take care of themselves, too. Being on the firing line year after year is a burden to the psyche of the winegrower, and burnout is an on-

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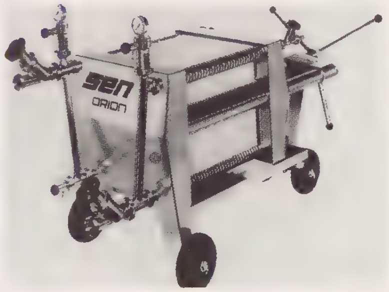

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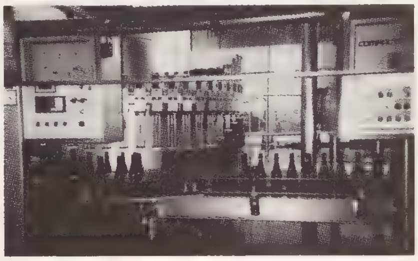
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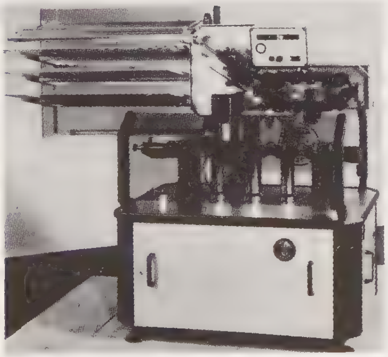
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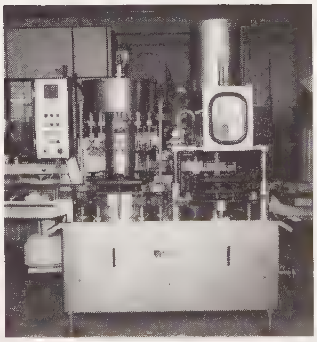
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going threat. It's easy to become complacent or to simply stop caring. A winegrower who doesn't care loses the hunger to make great wine, to make a lasting contribution to winegrowing.

The team

The winegrowing staff looks to the leader to set the tone for the work environment and to communicate to the staff a comprehensive vision of the grape style or wine style. Once that is developed, the key is to encourage everyone to be an active contributor to making that style what it is. In other words, each staff member must feel that he or she makes a substantive difference and puts a personal imprint on the grapes or wine.

Motivating staff is the most difficult part of management; it's easier to demotivate people, just as it is easier to destroy than to create. The better employees are at what they do, the more employment options they have, so the harder we have to work to keep them, and keep them happy.

Too often, the employees you don't have trouble keeping are the ones you wish would go away. So, the more committed to being the best you are, the more committed you must be to motivating those around you.

The first factor is gaining the respect of the staff. When you're earning your staff's respect, it helps to know what you're doing professionally and to admit that you don't know everything. I make a point, for example, to celebrate the many things that individuals on the team are better at than I am whether it is tractor repair, lees filtration, or computer spread sheets. Being open about your limitations and taking the lead in laughing about them, softens the blow about your being imperfect.

Motivating people requires discovering what matters to them, recognizing what they want rather than what you feel like giving them. I knew one guy who used to apologize to people by washing their cars. He thought that corrected any sin short of adultery (which would require extra detailing).

Given all the distractions and headaches that harry a leader, it's hard to find the time and the energy to carefully consider each staff member and figure out what each one cares about. Prolonged inattention to this issue is a sign of burnout, however, among other things.

In a tiny operation in which one person is leader and staff, the concept still applies. The one-man band must still motivate all those who supply services, from equipment venders to plumbers and labor contractors. Small operations tend to have less clout, so they must rely on networking. If they are run on a shoestring budget, they must use extra creativity to get what they want since waving dollars isn't an option.

How do you handle mistakes

Motivating employees and being the best mean fostering an environment in which everyone feels free to make helpful suggestions and to give input, even

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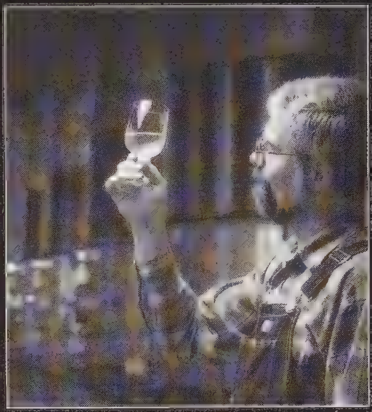

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when the news is bad. Leaders who shout at those who make mistakes, or who punish too readily, create a sense of fear that leads to silence.

What happens in your vineyard operation when someone mixes a tank of RoundUp when it should have been OMite? Do you hear about the mistake when it's discovered, before the spray mix has been applied? Or do you discover the mistake when leaves start falling off the vines, and the author of the mistake can remain anonymous? Fearful workers may do anything to hide their mistakes. A leader who is willing to eat the cost of dumping the wrong mix and be polite about it will reap the reward. In this case, the reward is not having RoundUp applied to his/her vines.

In addition, leaders who allow some mechanism for criticism of themselves without punishment, maximize their ability to improve personally and gain respect. The healthiest way to receive well-intended criticism from subordinates is the following: Don't ask yourself whether the accusation is true or false, but rather how much is it true.

Some leaders expect too much of their team members. It is important to consider regularly how much you ask and how much you give in return. The more you want from a person, the more you have to give in return. This includes requirements of experience, education, and commitment.

Most teams and individuals respond well to a leader who inspires by example. The surest way to have the group identify with the boss is when the boss: 1) works the most hours, 2) takes the most unpleasant job when his/her direct participation is required for a group effort, 3) takes personal responsibility when a mistake is due to a miscommunication between him/herself and any other member of the team, 4) protects any team member from unwarranted blame by those who do not understand specific circumstances, and 5) looks for opportunities to recognize and reward special achievement on the part of one or more members of the team, so that they feel that the leader is paying attention. The rewards may be symbolic, but the gesture matters a lot.

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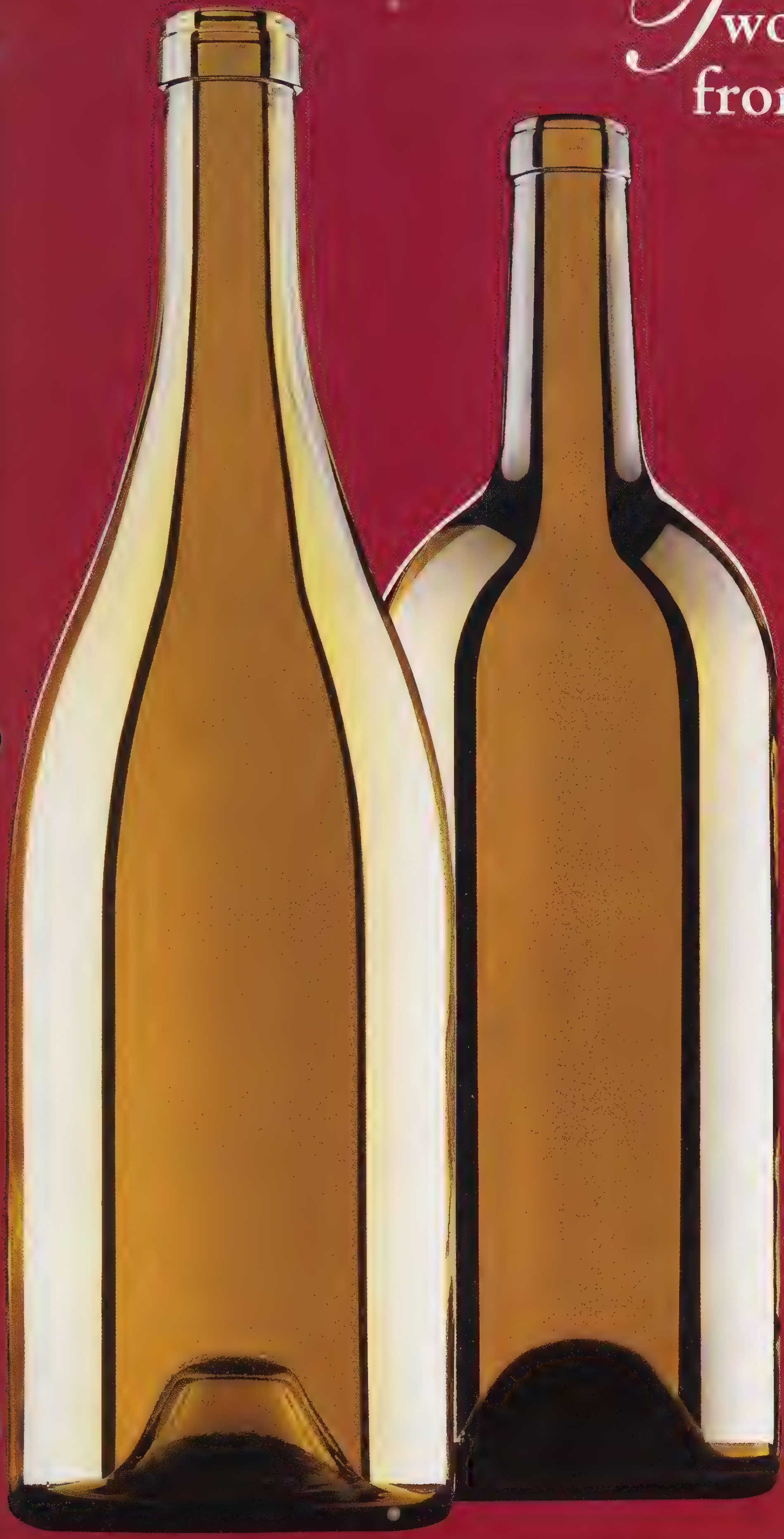

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DENNIS CANNING:

The image your brand needs to Succeed

by Marshall Newman

When it comes to building success in the wine business, Dennis Canning believes most wineries handle the challenge backwards. "They put grapes at the top, a winery next, then distribution and marketing, and the consumer at the bottom. In reality, the consumer should be at the top, because the consumer — by his or her buying decisions — will make you or break you."

This is the basis of an innovative approach to wine marketing that Dennis Canning has developed during his 30 years in the business. A veteran of Joseph Seagram & Sons, Browne Vintners, and Wine World, Inc., Canning became Kendall-Jackson Winery's first national sales director in 1983.

As founder of the marketing company Cannon Wines Ltd., he built Domaine St. George (Healdsburg, CA) from an idea into a brand with annual sales of 300,000 cases. Now, as chief executive of a new marketing company, Dominion Wine Group Ltd. (Corte Madera, CA), Canning and company President Stephen Turrini helped turn Raymond Vineyard & Cellar (St. Helena, CA) into a sales powerhouse in less than two years.

Canning calls his approach to brand building "The Image You Need to Succeed." "Image is a glamorous word, but building an image isn't glamorous," he states. "It demands intense, critical thinking, intelligent decision-making, and hard, boring work. In a limited way, I'm using the scientific method in the marketplace — cause and effect. Only by addressing what is important to customers can we affect decision-making processes."

For Dominion Wine Group Ltd., the first step in the brand-building process is determining the prospective consumer base, using sales targets as a guide (fig. 1).

"Perhaps six million people in the United States are serious 'core' wine drinkers," he explains. "The larger the target market beyond the 'core,' the more important safety becomes in image development. Many of these 'non-core' people are casual wine drinkers with limited wine knowledge, so — when the target number is substantial — creating an image that fits within the casual wine drinker's 'comfort zone' is critical."

The consumer base also suggests a mix of target customers, according to Canning. "The actual customers cannot be accurately determined without great cost, but the better the guess, the better our chance for success." The matrix he created for possible target customers (fig. 2) uses winery sales targets to suggest the potential market by sex, residency, income, and point of purchase. "Once we make an estimate of target customers, then a relatively detailed strategy to reach those customers can be drawn."

While Raymond Vineyard & Cellar was already a recognized brand with annual shipments above 100,000 cases and a national market by 1993, sales had stabilized at the 150,000 case level. To jump-start the brand, Canning and his associates immediately embarked on an image make-over, working hand-in-hand with Roy and Walter Raymond, the brothers who run the winery.

"A winery's name is the first element of image," Canning notes. "A great deal is transmitted to the potential customer through the words on the label, and the key word is the brand name." From past experience, he has created what he calls a "Richter Scale of Risk" based on the cultural personality of the brand name.

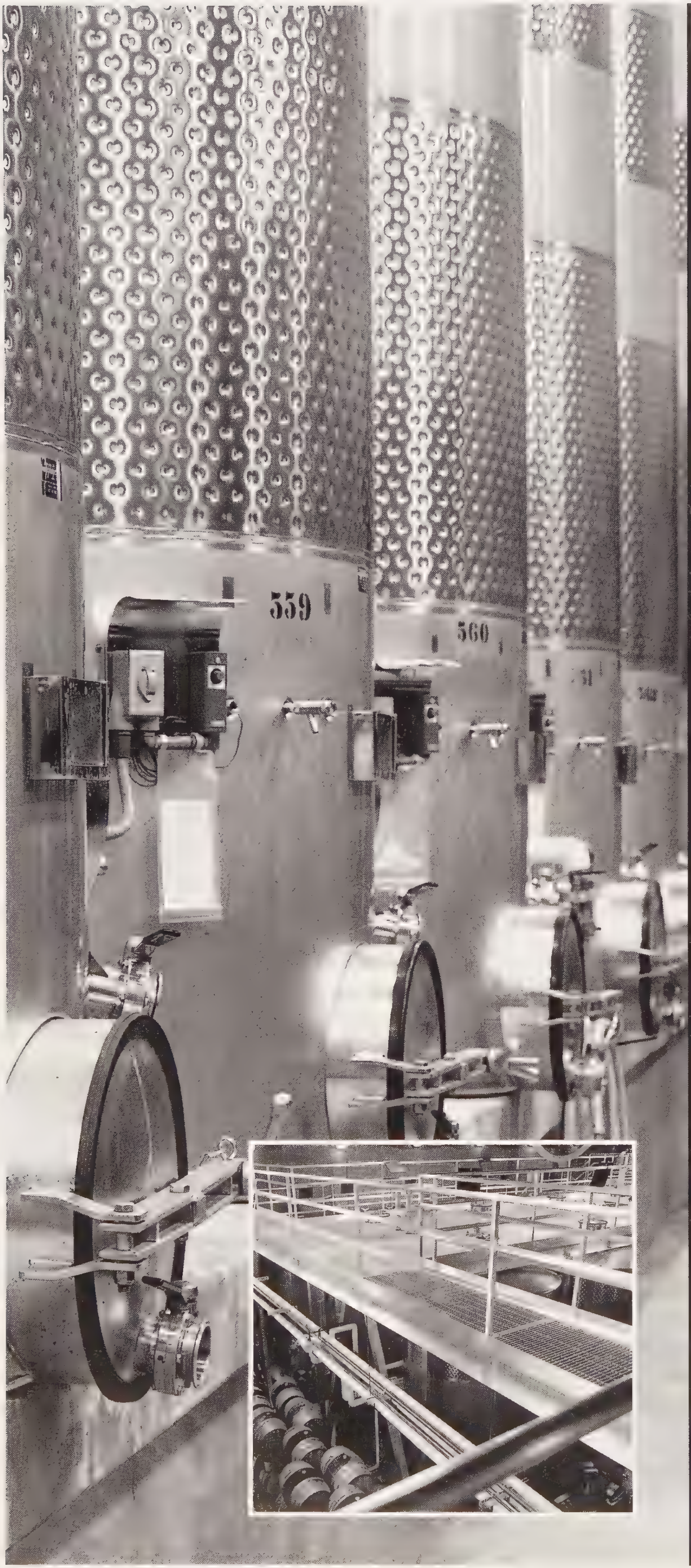
Basic Wine Personality
Richter Scale of Risk

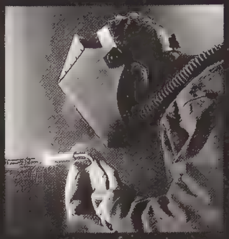
Anglo Saxon	1.0
French	1.5
California (New)	2.0
California (Old)	2.5
Italian	5.0
German	7.0
Intergalactic	10.0+

"In an infant wine culture such as we have in the United States," according to Canning, "names readily identifiable to the consumer have the lowest risk and the broadest market potential."

Already somewhat established as a brand name, Raymond was also virtually perfect; culturally identifiable both as Anglo Saxon and French, easy to pronounce, and distinctive.

The next area to receive scrutiny is the package — labels, bottles, capsules, corks, and cases. "A winery cannot succeed without a package that positively tells its story at a glance — a package that accurately projects its image."





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Canning's packaging philosophy — "dare to be the same" — may sound conservative, but it is based on market realities. "Unless a winery intends to remain small — traditional, classic packaging offers the greatest potential. Artsy-craftsy labels are popular with wineries right now; I think they're good only if a winery has little wine to sell. Consumers seek out labels with a traditional look, because they represent security. The choice for a winery is whether it wants to make a statement or a customer."

Canning sees emotion as *the* critical element in wine-buying decisions and believes in package designs which engage the power of emotion. "Intellect is very slow, while emotion is very fast.

"It takes about eight hours to have a laboratory analyze a wine in depth using conventional equipment — intellect — yet most humans can evaluate a wine in less than one second with their palate and can see a label at the speed of light, creating a swift — emotional — response. Ironically, many of the most 'palate-challenged' people wind up being winery owners and university-trained (intellectual) winemakers, which explains many of the industry's ills.

"Most wineries don't take into account the absolute power of the consumer to make nanosecond decisions about a brand based on the emotional impact of the label and powerfully reinforced by appealing taste."

In particular, Canning believes in the power of symbols in wine label design. "Symbols communicate to consumers in a powerful way, but in a way which we really don't understand. It's ancient knowledge — consider the crests and coats-of-arms from centuries ago — yet it remains valid today."

A label symbol doesn't have to be large to be effective. "We think smaller is better," Canning notes. "The human mind can capture the details. The symbol has to communicate something real — not mythical — about the brand and have universal appeal. The power of shape, the power of form, the power of color — together — talk to our origins. Things like great buildings and great art we identify with on a deep level.

"Now, I'm not going to put wine labels in the same category as the Mona Lisa, but there is a rough correlation, in that we can create labels which virtually everyone agrees they like, even though they don't know why."

Canning believes a winery should screen three label designers before choosing one to handle its package redesign. "The package is a winery's most important investment; spend the time and money to do it right."

With Raymond Vineyard & Cellar, a history of five generations of winemaking in the Napa Valley and a family partnership spanning more than 20 years inspired elements in the new package development. Working with Lynn Keller, proprietor of HKA Design of San Francisco, a new crest was created for the winery and incorporated into new label designs for three wine tiers: Raymond Generations, Raymond Napa Valley Reserve, and Raymond Estates. Raymond created additional crest and label designs for Amberhill, a separate line of premium varietals

Fig 1 -The Consumption Chain

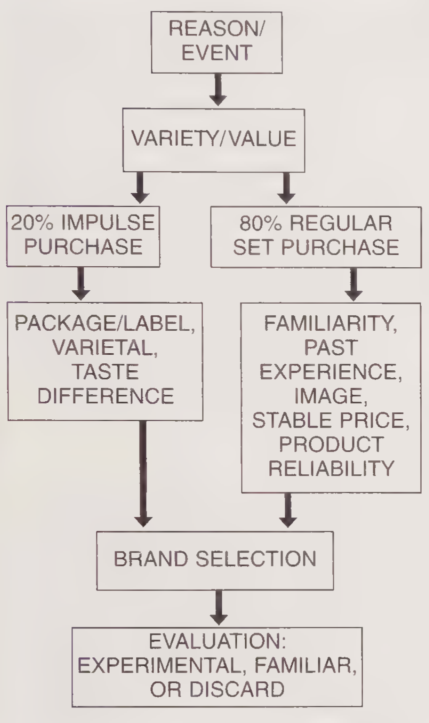
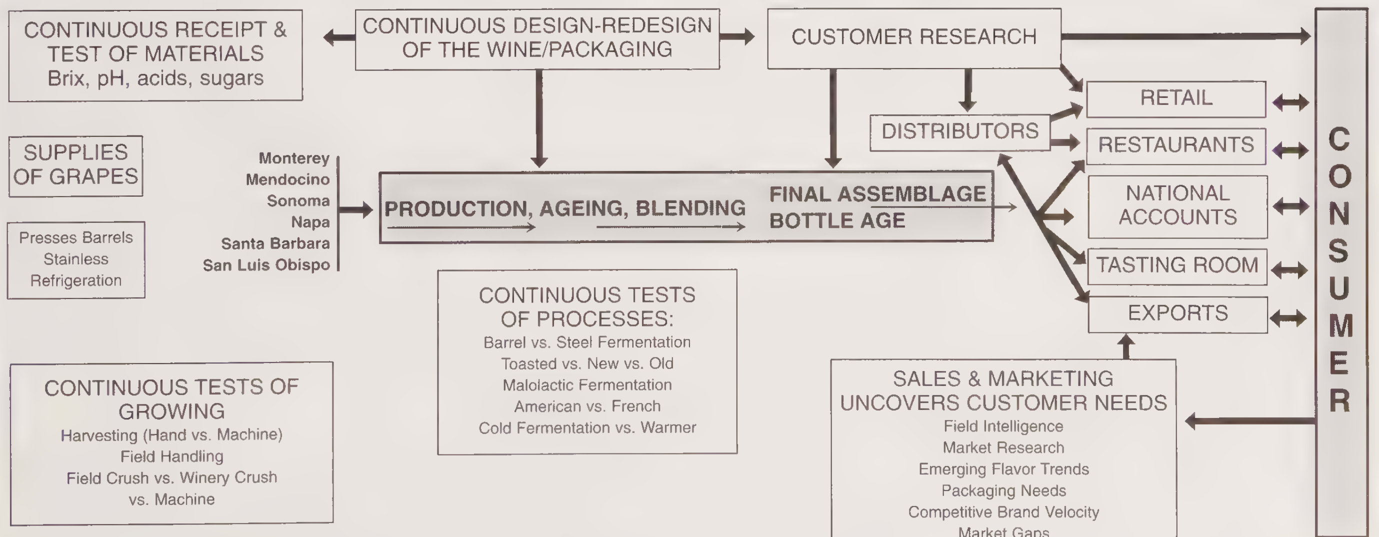

REASON/ EVENT
VARIETY/VALUE
20% IMPULSE PURCHASE
80% REGULAR SET PURCHASE
PACKAGE/LABEL, VARIETAL, TASTE DIFFERENCE
FAMILIARITY, PAST EXPERIENCE, IMAGE, STABLE PRICE, PRODUCT RELIABILITY
BRAND SELECTION
EVALUATION: EXPERIMENTAL, FAMILIAR, OR DISCARD

Fig 2 - The T.Q.C.* SYSTEM 1971-2000



Source: Adapted from Deming Management Method

*T.Q.C. = TOTAL QUALITY COMMITMENT

blended from several regions of California. (Raymond's Chardonnays in these tiers sell for: Amberhill, $8; Estates, $12; Napa Valley Reserve, $18; and New Generations, $30.)

A new label logo-type was chosen which maintained the identity and equity developed in the previous label. Heavy, flanged, punted bottles were selected to provide a traditional, luxurious look and "hand mass." "When it comes to creating an image, the devil is in the details," Canning states, "But so are the solutions."

When the new package concept was complete, it was shelf tested. "We put a mock-up of the Chardonnay on a store shelf to gauge consumer reaction," he recalls. "The Raymond Napa Valley Reserve Chardonnay package outshined everything in sight every time, everywhere we placed it!"

The wines were tested by an independent research facility as well, to make certain they appealed to consumer tastes, far exceeded the competition, and met the expectations created by the package.

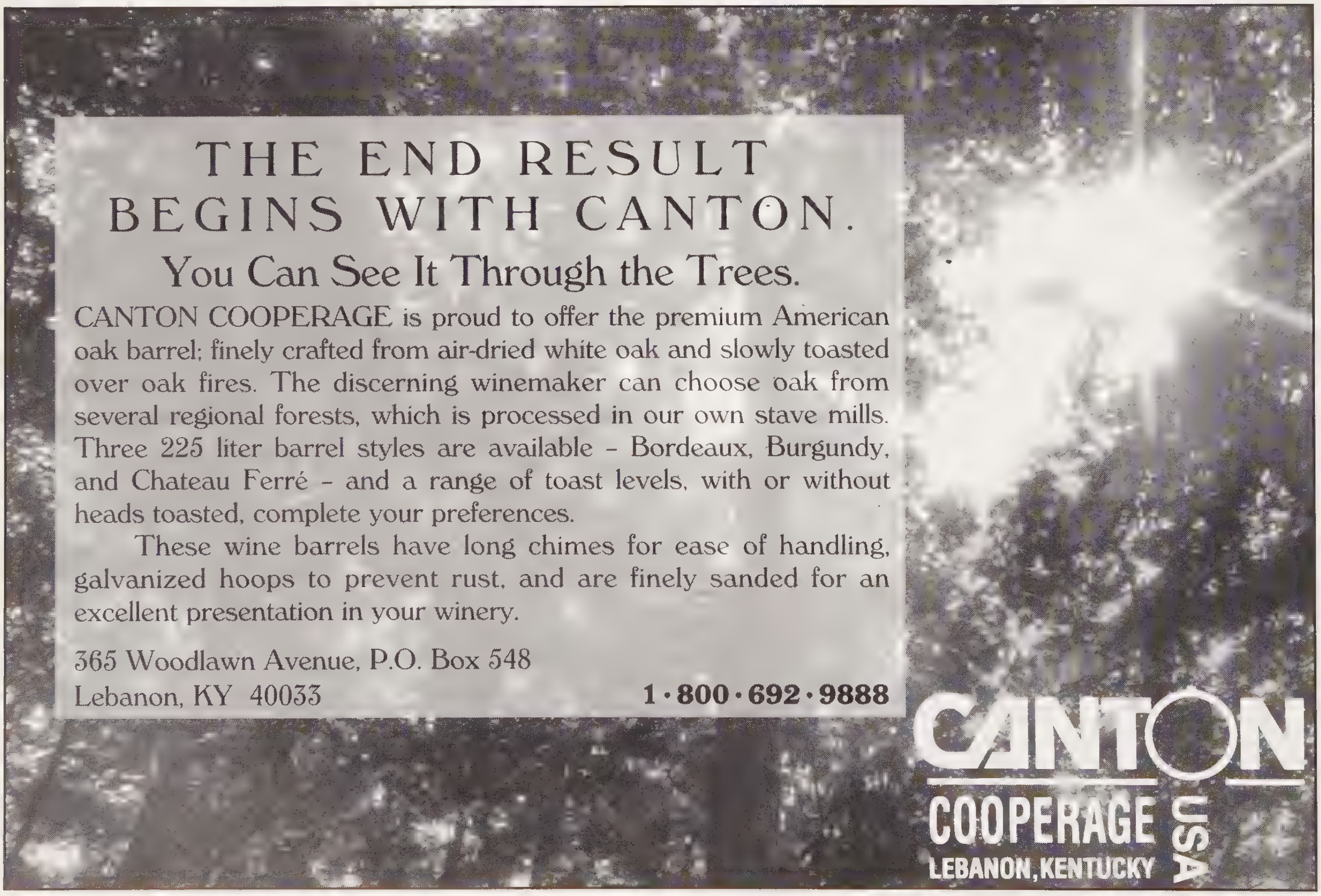
"We want each winery we work with to make the best possible wines. The broader the customer palate range, the greater the need for consistency and quality in the wines. They must be true to the grape, fresh and clean, minimally processed and preserved, lush and voluptuous, well-balanced, and taste good. ***Taste good***! They also have to reinforce the impression of the package. When we can deliver on those expectations, we have a winner."

The new Raymond packaging was introduced in early 1995. The performance of Raymond Vineyard and Cellar wines with the new look has been very impressive. In 1993, the last full year of the old package, Raymond shipped a total of 155,000 cases, according to *The Gomberg-Fredrikson Report*. By 1995, *The Gomberg-Fredrikson Report* shows annual shipments had jumped to 223,000 cases. Continued shipment growth in 1996 brought record shipments of 265,000 cases for the year.

The benefits of such a consumer-oriented approach go beyond increased sales, according to Canning. "The investment in consumer-perceived quality actually enables prices to be raised, even as growing production brings unit cost down. The net result is greater profitability."

Canning is quick to point out that image alone cannot produce great results. The Dominion Wine Group provides its clients with a range of marketing support, including strong distributor contacts, proprietary distribution tracking (SALESTRAC™) and financial systems (SUPRNIBIT™), financial assistance, and assistance with broad-based, market-by-market public relations.

But the key role of image is undeniable. "If one begins with the consumer in mind, one must continuously improve in the direction the consumer wants," Canning observes. "The wine business isn't a destination, it's a process of constant improvement. If a winery wants to stay afloat, it has to stay ahead." ■



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BECKSTOFFER VINEYARDS

Crafting balanced vines for quality wines

by Don Henfling

A successful vineyard operation produces a high yield of sought-after grapes of such quality that the resulting wines enhance the reputation of the vineyard. How does one of the largest suppliers of wine grapes from the North Coast region of California succeed at producing such top quality grapes?

Beckstoffer history

In the 1960s, the Heublein Corporation recognized a tremendous potential for the wine business and eventually for California wines. Andy Beckstoffer, working as a young executive for Heublein, was directed to analyze the California premium wine market and propose a strategy for Heublein to enter this venue. As a result of his work, Heublein bought Beaulieu and Inglenook wineries in Napa Valley along with Italian Swiss Colony in Sonoma County and several appropriate vineyards.

Beckstoffer also put together a vineyard management company for Heublein called Vinifera Development Company (VDC). Connecticut Mutual Life (CML) and Heublein were corporate partners, and Beckstoffer helped the two acquire additional vineyards.

In 1973, Heublein decided to phase out of vineyard operations. Beckstoffer purchased VDC and several Heublein-owned vineyards in a leveraged buyout. As sole owner of Beckstoffer Vineyards, he renamed the vineyard management company Napa Valley Vineyard Company and Mendocino Vineyard Company (MVC). These two vineyard management companies managed Beckstoffer's vineyards, the remaining vineyards of Heublein and CML and other vineyards — a total of 3,000 acres in Napa and 400 acres in Mendocino.

In 1978, Beckstoffer became insolvent due to the accumulated debt of the leveraged-buyout. Heublein wouldn't extend financing, so he was forced to relinquish all his vineyard holdings except for 400 acres in Mendocino and 160 acres in Napa.

For the next ten years, Beckstoffer rebuilt his business by returning all profits to the operation. A new Napa management company was formed: Winegrowers Farming Company (WFC).

In 1988, Beckstoffer shifted the focus of his farming company. Today, except for 200 acres in Mendocino county and 100 acres in Napa county, WFC concentrates on managing the Beckstoffer owned 2,000-acre holdings; many of them vineyards that WFC had been managing and Beckstoffer purchased as they became available.

Fremont Creek

Also in 1988, Beckstoffer launched the Fremont Creek wine brand. Production reached 20,000 cases/year of primarily Mendocino wines selling at less than $10/bottle. Sutter Home handled the actual winemaking and marketing. By 1991, Fremont Creek was competing in the fighting varietal market segment against large wineries with greater marketing presence.

The profit squeeze, traveling, winemaker dinners, retailer discounts, and schmoozing with distant distributors took their toll on Beckstoffer. In 1993, the venture ended. The last Fremont Creek Cabernet Sauvignon was produced in 1991, and now Beckstoffer focuses entirely on supplying grapes to other wineries.

No Sonoma County vineyards?

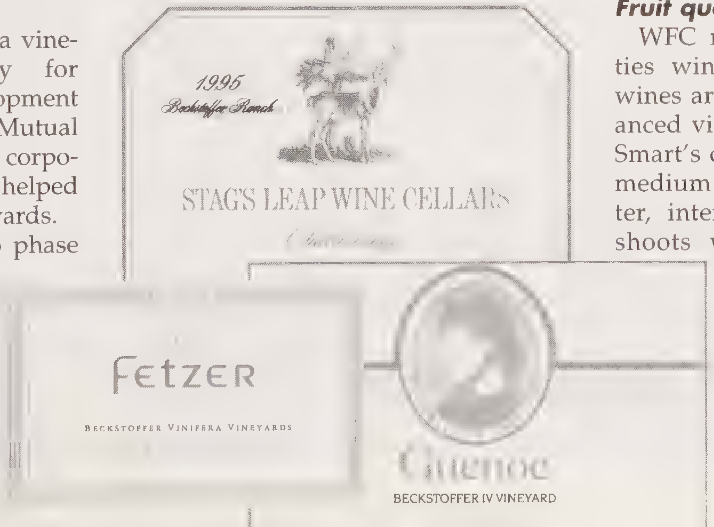
Beckstoffer has no vineyard operations in Sonoma County because of economy of scale. "It's not that Sonoma County vineyards aren't of interest," he says, "but simply that we have not yet been able to put together vineyard purchases that would support the type of operation we run.

"Our purchasing criteria are to locate great land with old outdated grape vines, buy during down cycles in the marketplace, and buy with the intent of replanting. We only buy great vineyard soils even if we have to pay too much." Beckstoffer has never bought a vineyard where he wanted to keep the producing vines.

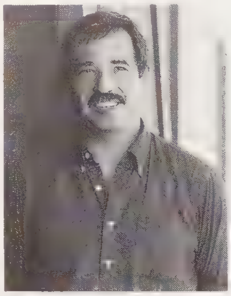
Fruit quality

WFC management feels the qualities winemakers strive for in their wines are a result of grapes from balanced vines. WFC adheres to Richard Smart's definition of the ideal vine — medium vigor shoots of ⅜-inch diameter, internode length of six inches, shoots with 15-16 leaves that are three feet long supporting two grape clusters.

"A balanced vine requires the row width, vine spacing, rootstock, grape varietal, clonal selection, trellising system, and soil



amendments to match soil type, soil depth, weather, and available water," says John Crossland, WFC chief viticulturist and vice president of vineyard operations.



Napa vineyard manager: Mike Wolf

Once the vineyard is developed, pruning, watering, cover crop, tilling, and pest management options are adjusted; all striving for balanced vines producing grapes in demand. "We have to become, and indeed, are becoming better farmers," says Mike Wolf, Napa Valley WFC vineyard manager.

"Because AXR-1 was such a versatile rootstock and so easy to use, grapegrowing used to be easier," continues Wolf. "Now the opportunities as well as the uncertainty of choices presented by replanting vineyards make decisions more difficult and crucial."

Vintners often try to equate grape quality with yield, expressed in tons per acre of grapes. Beckstoffer uses a different system to account for the diversity of vineyard plantings when measuring yield.

WFC divides the square feet in an acre (43,560) by the row width in the vineyard to produce a number that expresses the lineal feet of cordon running through the vineyard. The tonnage (expressed in pounds) harvested per acre is then divided by this number to arrive at the pounds harvested per lineal foot of cordon.

For example, consider a vineyard yielding 5.5 tons (11,000 pounds) per acre with a row width of eight feet:

then: 43,560 sq.ft. ÷ 8 = 5,445 lineal feet of cordon

and: 11,000 pounds ÷ 5,445 = two pounds/lineal foot of cordon

"Regardless of vine spacing within the row," says Crossland, "two pounds/lineal foot of cordon is pretty close to the ideal for a balanced vine producing high-quality grapes."

Applying this goal of two pounds/lineal foot of cordon to a vineyard with six-foot row widths yields 7.26 tons/acre. Perhaps in richer soil with an appropriately vigorous rootstock, the closer-spaced vines would still be balanced but the yield would be higher. The goal here is to match the development parameters to the vineyard environment to maximize grape quality and yield.

Combine this with the WFC emphasis on sustainable farming practices and the narrow window of °Brix, pH, and TA premium wineries require in their grape contracts, and the result is a need to establish better communications between growers and wineries. This management style requires not only better executive decisions but a better trained workforce, which means long-term, loyal workers to implement the development and harvesting of a vineyard.

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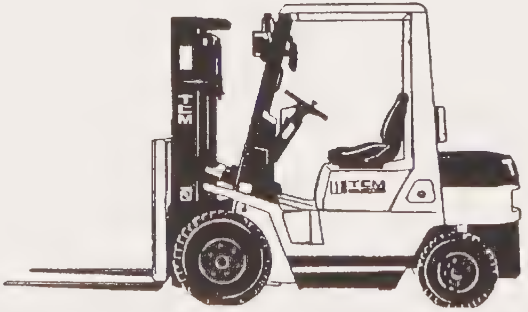

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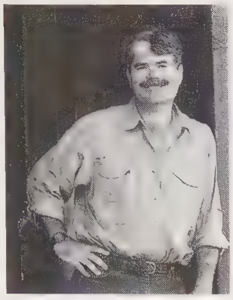


John Crossland, chief viticulturist

WFC uses scientific tools and techniques to dispel generalizations and prejudices surrounding the growing of quality grapes. For example, some traditional winemakers believe vines should never be watered after the first of August. However, there are instances when vines and grape quality are improved by late irrigation.

Crossland recalls grapes from gravely soil that had received several irrigations during August that WFC delivered to a prominent Napa Valley winery. The vintner marveled at the fruit quality and simply didn't believe that the vines had been irrigated so late.

"In addition to traditional observations such as general vine appearance or monitoring tip growth or simply using a shovel or auger to inspect soil moisture, we use a neutron probe to determine when a vine needs water," notes Crossland.

Weekly readings indicate the moisture change in the soil. This water tension varies; not all the moisture is available to the vines. Below a minimum moisture in the ground, called the permanent wilting point, no moisture is available to the vine. Between the minimum and the maximum moisture, or field capacity, is WFC's target for achieving optimum vine performance. WFC finds that many of the new rootstocks in new vineyards need additional water late in the growing season to stay within this targeted ground-moisture range.

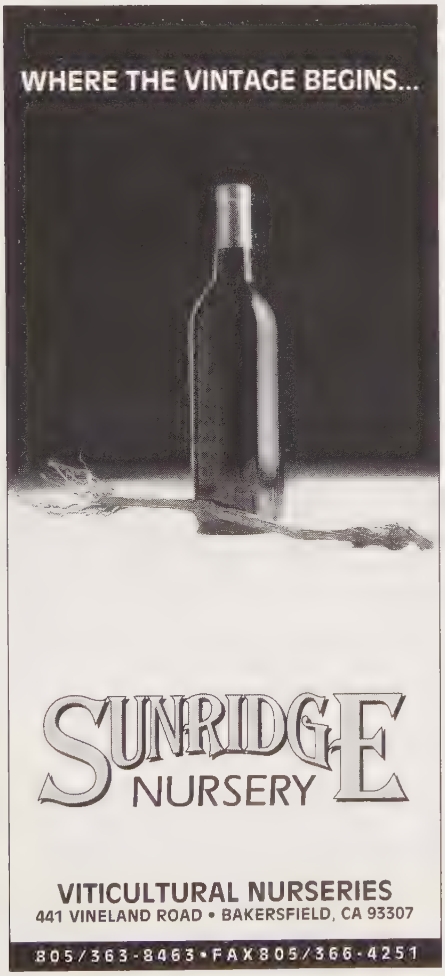
Clonal diversity

Clonal diversity has been planted in Beckstoffer vineyards with the goal of providing complexity in the resultant wine. Beckstoffer claims it is one of the first vineyard operations offering this clonal diversity within given vineyards.

On various Beckstoffer ranches, six clones of Cabernet Sauvignon, three clones of Pinot Noir, and five clones of Merlot are planted. Although Chardonnay clone #4 has been the California standard since the 1970s, Beckstoffer is committed to several Dijon clones.

"We have tried to match the vigor potential of rootstocks to the soil and varietal selection to achieve a balance," says Crossland. "We chose 101-14 for Carneros and upper Napa Valley where there is no fan-leaf problem. Suitable to clay-loam soils, 101-14 can handle 'wet feet' in the spring and stimulates early bud break and ripening. But we want to diversify our plantings with other rootstocks to avoid potential mono-culture problems."

On the Carneros ranches, 101-14 has been planted with the Pinor Noir Dijon clone #113 on top. Chardonnay selections on 101-14 include clone #4, Robert Young, and Dijon clones #95, #96, #76.



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Carneros: Frank Villanueva and son Frankie

Merlot selections on 101-14 are #1, #181, and #314.

Other rootstocks in Carneros planted include 3309 with Pinot Noir Dijon clone #115. Chardonnay Dijon #76 and #96 on 3309, Dijon #95 on SO4, and #5 on 5BB and 5C. Merlot selections include #1 and #314 on 3309, #314 on 1103P, #6 on S04, and #181 on 420A.

On the Tokalon ranch in Oakville, all new plantings are on 039-16 rootstock due to a fan-leaf problem. Cabernet Sauvignon scion selections include clone #4, #6, #7, and #337. There are two Merlot scions, #1 and #3, only Cabernet Franc #1, and one proprietary clone of Petit Verdot.

Varietal selection

Carneros is known for Chardonnay and Pinot Noir; however fully half of the new plantings on Beckstoffer's two larger ranches there are to Merlot, according to Frank Villanueva, Carneros vineyard manager. This decision was made three years ago based on the assumption that California's best red wine grapes are grown in Napa Valley. Extensive studies showed that Carneros ranches are ideal to grow Merlot.

Crossland sees Merlot as an increasingly desirable varietal that does well in the cool Carneros climate without producing fruit with green, vegetative wine flavors as often happens in similar cool, central-coast vineyards.

"Quality Chardonnay can be grown in many other areas of California, including Mendocino, Monterey, Edna Valley, and the Sonoma coast," says Crossland. "Therefore, growing Merlot on the Carneros ranches is the best use of these specific sites."

"The quality of the Syrah grown by Hudson Vineyards and the Cabernet Sauvignon grown by Tony Truchard, among other red varietals coming from the Carneros, strengthens our decision."

Low yield makes it difficult to justify Pinot Noir plantings in Carneros, although Beckstoffer has planted 20 acres to Pinot Noir.

Soil amendments

When replanting, WFC begins by discing five tons/acre of compost (grape pomace) into the top soil. "Our Carneros soil has lots of gravel with generally over four feet of depth available to the vine roots," says Villanueva. Gypsum ($CaSO_4$) is applied to correct any low Ca/Mg ratio; when the ratio is raised, it makes available needed elements such as potassium ion (K+). Limestone is applied at up to 10 tons/acre to raise the pH from a low five to an ideal of six, although a pH about 5.5 is suitable.

"Where we observed soil compaction and stratification, we ripped to five feet with a slip-plow on four-foot centers in two directions," says Crossland. "In soils with uniform texture throughout the rooting depth,

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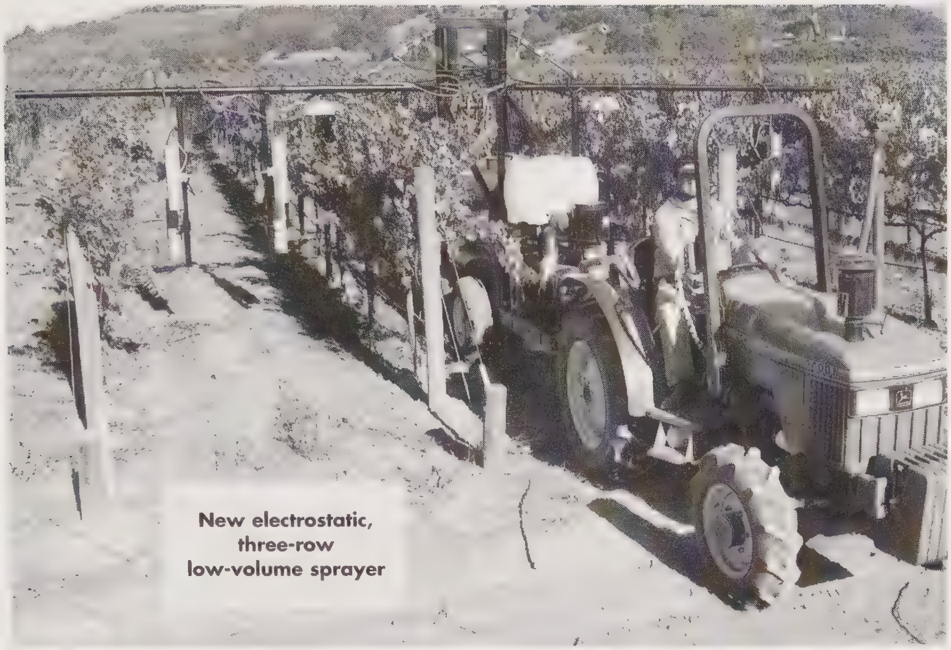

New electrostatic, three-row low-volume sprayer

ripping was done with straight shanks to a depth of four feet on 36-inch centers in two directions."

Ground cover

WFC uses various ground covers to prevent erosion and to minimize soil compaction due to the weight of vineyard equipment. Barley is planted between rows of young vines, mainly for erosion control, and molate-fescue is being experimented with. This native grass becomes dormant in the summer and doesn't compete with the vines for summer nutrients and water.

Ground cover is planted every other row, with remaining rows clean-tilled. This allows farm vehicles to travel on the ground cover, but minimizes the amount of ground cover competing with vines and stunting vine growth.

In 1997, WFC has begun using a new electrostatic, low-volume sprayer pulled by a 65hp, 52-inch wide tractor with tandem wheels on the sprayer that minimizes soil compaction by covering three rows in one pass. The sprayer has 40 On-Target™ electrostatic nozzles, six per vine row, and four on the overhead booms to spray the center of the GDC trellis.

"The new sprayer will reduce our mixing and loading time to once per shift," reports Crossland. "We will achieve improved coverage with the active ingredients in the target zone. We plan to have more electrostatic sprayers in the future."

The new sprayer will be used to apply wettable sulfur and other fungicides, insecticides, or foliar nutrients.

A new or replanted vineyard is tilled clean until after the third growing season. Legume cover crops, such as beans, peas, vetch, and oats are planted. They fix nitrogen and are disced back into the soil to make the nutrients available and add organic matter and stimulate microorganisms. Not only does this act as a fertilizer, but it is a soil builder, adding tilth and humus, and also increases water penetration.

Native perennials are also used for ground cover. These devigorate the soil being moisture-obligate and compete with the vines in the spring. They are mowed two or three times/year. Cover crops also provide growing sites for predators such as spiders that eat vineyard pests. Vines that compete with cover crops yield shorter vine shoots and laterals with more fruit, requiring less leaf removal.

Mendocino County ranches

WFC vineyards in Mendocino County are not yet being replanted, even though nearly everything is on AXR-1 rootstock, because phylloxera isn't widespread in Mendocino yet. The existing Cal-T vines are simply being retrained to the Ballerina trellising system. The Cal-T trellis has had extensive prior use in California.

Vine rows are 10 to 12 feet apart with six to eight feet between vines totaling 600 vines/acre. There is a 24-inch wide crossarm at every other vine. The vine head is 48 inches high, with a crossarm 18 inches above the vine head and one wire on each crossarm end.

The Ballerina retrofit system of the Cal-T trellis is used in Mendocino, where there is high vigor. The conversion is

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PROPOSED SCHEDULE:

9:00 – 9:15am
Introduction by Chair
Daniel Roberts, Winegrowing Research Manager, Kendall-Jackson Winery

9:15 – 10:00 am
Zinfandel and its histories
Charles Sullivan, Historian and Author

10:00 – 10:40am
Zinfandel Viticulture
David Gates, Vineyard Manager, Ridge Winery

10:40 – 11:30 am
Amador Zinfandel – What makes it unique?
Gordon Binz, Winemaker, Renwood Winery

11:30 – 12:00
Old vine Zin - Care and maintenance
Dave Rafanelli, Owner and Winemaker, A. Rafanelli Winery

1:30 2:20pm
Zinfandel Clonal Trials
Jim Wolpert, Chair
Dept. Viticulture & Enology, UCD

3:20 – 4:20 pm
Zinfandel Origins?
Carole Meredith, Professor, Viticulture and Enology, UCD

4:20 – 4:30pm
Finale – Daniel Roberts

4:30 – 5:30pm
Informal tasting of Zinfandel wines

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quick and easy with a one-year payback, which justifies conversion even though all the vines are on AXR-1. All conversions so far are on Chardonnay. Replanting will be to Chardonnay, Cabernet Sauvignon, and Merlot.

Other grape varieties on the Mendocino ranches include Carignane, Chenin Blanc, Gerwurztraminer, Petite Sirah, Sauvignon Blanc, and Viognier.

With the Ballerina, extra posts and wires are added to train the top two-thirds of the foliage upward, while the lower one-third is trained to grow down and out, looking like the skirt of a ballerina. This system was designed by Dr. Richard Smart.

Organic or sustainable farming techniques are also emphasized. Eventually, the six Mendocino vineyards will be replanted, and the lessons learned in Napa will aid in making the Mendocino replantings state of the art.

The Beckstoffer Russian River Vineyard includes 120 acres of CCOF (California Certified Organic Farming) vineyards. In alluvial river soil, Chardonnay yields over eight tons/acre, reports Mike Boer, Mendocino Vineyard Co. (MVC) vineyard manager. The grapes go to Fetzer Vineyards for the Bonterra Chardonnay. Another 15 acres in Ukiah and 10 acres in Napa County are in transition to CCOF, though Beckstoffer has some hesitation about becoming certified.

CCOF requires high certification fees and a 50-foot buffer between neighboring crops. "We would like to use Provado (combined with wettable sulfur) to control leaf hoppers," says Boer, "and to have the option of using RoundUp as a herbicide on young vines. RoundUp has low toxicity, and it breaks down quickly in contact with clay colloids. In 50% of Beckstoffer's Mendocino vineyards, no herbicide is used, we rely on the hoeplow to keep vine-rows clean."

Sustainable farming is practiced as Beckstoffer defines it: a common sense approach that doesn't ignore valuable help from "soft" chemicals when appropriate.

Mendocino vineyard manager: Mike Boer

MVC is continually looking at alternatives to chemical assistance and focusing on economic factors to minimize chemical usage when appropriate. Function is more important than aesthetics. Organic farming in Mendocino is hampered by the high rainfall. "*Organic* is more of a political and legal term," adds Boer.

Grape pricing

Grapegrowers often base the price of grapes on the retail bottle price of the wine made from their grapes. Beckstoffer has charged a price per ton that is the bottle price multiplied by 100. Using this formula, a winery retailing wine for $20/bottle would pay $2,000 per ton for the grapes.

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Since retail prices are often subject to complex discount programs, another variation is to set the price of grapes as a fixed percentage of the FOB case price. For example, if the grape price is set at 25% of the FOB (the historical average for super premium wines), and the wine yield is 65 cases per ton and the FOB case price is $120 ($20 per bottle to the consumer), the pricing equation is 0.25 x 65 x $120 = $1,950 per ton.

To determine the financial return per acre of grapes under the bottle-price formula requires not only estimating the yield in tons of grapes per acre, but also communicating with the winemaker to estimate the selling price of the finished bottle. Complications to this technique arise when wines are made of blends from several growers.

Beckstoffer sees this bottle-price formula as appropriate for long-term partnerships with wineries capable of producing and marketing premium wine. In essence, Beckstoffer says, it takes him out of the commodities market and gives him an incentive to supply the winery with its best grapes, because they will be selected for vineyard designated wines or reserve programs that command the best prices.

Andy Beckstoffer

This price formula is used by Beckstoffer for "grand cru" varietals, such as Cabernet Sauvignon, Chardonnay, Merlot, and Pinot Noir, and is incorporated as a feature of long-term contracts. Thus, he minimizes the risk of yearly fluctuations of grape prices and participates with the winery in the final value of the wine.

Conclusion

Andy Beckstoffer heads an aggressive, highly-organized operation that defines and tries to be on the cutting-edge of vineyard development and management. In the last six to seven years, Beckstoffer has invested $5 million/year in vineyard acquisition and development. Twenty years ago, Beckstoffer was struggling with a leveraged buyout. Now he owns 2,000 acres of vineyards (multiply 2,000 acres by $40,000/acre) and gets financing from insurance companies like Equitable and Prudential, and WestAmerica Bank.

Clonally-diverse varietals are being planted to match vineyard sites to produce quality fruit. More resistant rootstocks and better trellising systems are being used to achieve the quality and yield that come from balanced vines. A variety of tools and environmentally-sensitive techniques insure that the vines, land, and water sources remain in optimum condition.

If this pace of acquisition, development, research, adaptation, and winery-grower communication keeps up for another 20 years, Beckstoffer Vineyards will have a commanding presence in the grapegrowing arena. ■

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GOING CORPORATE

A sole proprietorship may have suited you in the past, but a partnership or corporation can help with taxes, legal and financial liability, and estate planning.

by Eric McMullin

Like many winery and vineyard owners in a maturing industry, Jack Cakebread is looking to change the ownership structure of Cakebread Cellars (Rutherford, CA) and has assembled a team of advisors to help him decide which structure to choose and establish. "We formed an S Corporation for the winery in 1986. Now we're looking at either an LLC (limited liability company), an S Corporation, or a family partnership for the vineyard.

"I would suggest that anyone who's contemplating such a change find an extraordinarily good estate planner, an extraordinarily good attorney, and a very astute accountant. And don't forget your lender."

As the value of their operations rises, many first-generation winery and vineyard owners are preparing to pass the assets on to the next generation.

What are the issues involved in changing the ownership structure of your operation? What are the benefits, and what kind of help will you need?

"I would say the trend is definitely toward the more sophisticated ownership structures, especially as owners begin looking more closely at estate issues," says Jeff Kanter, vice president of Pacific Coast Farm Credit and 15-year veteran of wine industry finance issues. "An ownership structure more sophisticated than a sole proprietorship can offer numerous benefits, especially with respect to financial liability, taxes, and estate planning." (See sidebar below.)

For Cakebread, there are important benefits to be realized. Former owners of an auto repair shop in Oakland, CA, Cakebread and his wife Dolores entered the wine business in 1973 and today have one of Napa Valley's better-known brand names. Cakebread Cellars distributes about 65,000 cases of premium wine each year from its Rutherford winery. The Cakebreads own 75 acres of Cabernet Sauvignon, Merlot, and Sauvignon Blanc vines in the area, and buy the majority of the grapes needed from some of the same independent growers every year. "Those relationships go back 25 years," says Cakebread.

In 1986, the Cakebreads formed an S Corporation for their winery because "incorporating gave me liability protection," Jack Cakebread explains. "Plus it's more convenient when securing outside financing because you can pledge as collateral a number of shares equal to each person's level of investment. This also works for estate planning. It's easier to distribute ownership, and if my heirs decided they didn't want to be in the winery business this business structure ensures that the winery will continue after my time."

As part of the incorporation, Jack and Dolores formed an outside board of

WHAT BUSINESS STRUCTURE IS RIGHT FOR YOU?

Within the general categories of partnerships and corporations, there are several structures from which to choose. The primary ones are:

- ***General partnerships,*** in which two or more people own and operate a business. If you take on one or more partners, you must abandon your sole proprietorship. General partnerships are a popular first step. The legal structure is not confusing, and the paperwork requirements are not as formalized as with corporations. Also, an $800 franchise tax is charged to each of the other structures, but not to general partnerships. However, the liability benefit (see BENEFITS box, p .43) is not available in a general partnership, and other structures usually offer more benefits.
- ***Limited partnerships,*** under which one partner is the general partner and the others are limited partners. This is used when one person will be managing the operation, and the others are simply investors. The limited partners' liability is limited to the extent of each of their investment, but the general partner's liability has no limit.
- ***Limited liability companies*** (LLCs), a structure just approved in 1995 in California that extends the liability benefit — where liability is limited to the business and its assets and your personal assets are protected — to both general and limited partnerships. Stock can be issued, making transferability easier. Otherwise, LLCs operate about the same as general and limited partnerships. Profits are taxed only at the individual level, although the LLC itself faces a gross receipts tax that starts at $500 per year for gross receipts over $250,000 and rises to $4,500 for LLCs with total revenues of $5 million or more. LLCs are already a very popular choice, although their newness means they don't have much of a track record to study.
- ***S Corporations,*** which are similar to LLCs in that owners are extended the liability benefit but corporate profits in essence are distributed to individuals before they're taxed. S Corporations had been the choice of many, but are less attractive now that LLCs have arrived. Also, the incorporation rules can be a little more confusing. One obvious point is that S Corporations are still useful when only one person owns the operation. (You need partners to form a partnership.)
- ***C Corporations,*** within which liability protection is available but profits are potentially taxed at both the corporate and individual levels. A C Corporation is used primarily for publicly-traded companies, and can be used for privately held businesses which own appreciating assets. ■

directors. "The board's advice has been particularly helpful on marketing and financing," says Cakebread. "Peter Chiarella is the former chief financial officer of Clairol, and he's now on our board of directors. He's also our chief operating officer. We borrow from Pacific Coast Farm Credit, and Peter works great with them."

Now that he's looking to change the business structure of his vineyard, Cakebread has assembled his own team. He's working with John Comyns, CPA and tax strategist (Lafayette, CA); attorney Reverdy Johnson (Santa Fe, NM); Ed Kempey of Kempey Insurance in Napa; Rick Bliss and Bob Drazian from The Mid-Atlantic Companies, Ltd., a financial services and estate planning firm (Concord, CA); and Ron Carli, President and CEO at Pacific Coast Farm Credit (Windsor, CA).

"Your lender is very important in this process," Cakebread explains. "The lender is an expert source at the outset, plus once the ownership structure is established, he's the first one you'll turn to for financial needs."

Cakebread assumes he'll form either a general partnership, an LLC, or a family partnership. "I probably wouldn't choose an S Corporation because the LLC gives me much the same thing without the paperwork required for an S Corporation. I wouldn't use a C Corporation because you generally don't want to put real estate and production facilities into a C Corporation. Those assets can appreciate tremendously over time, and with a C Corporation, you're taxed at two levels when you sell those assets. So it looks like the family partnership is the way to go."

The Cakebreads recognize that with their substantial estate and many heirs, it's important to adopt a structure that will allow the business and its assets to pass to the next generation as efficiently and cost-effectively as possible.

"We have three sons, three daughters-in-law, and four grandkids," says Jack. "Two of our sons work in the business, and the third is our financial advisor. Bruce is winemaker and vice president of production, Dennis is vice president of marketing and sales, and Steve is an executive with a computer company and serves as our financial advisor. Each of their wives also works in the business. Rosemary is assistant

BENEFITS

The primary benefits of forming a partnership or corporation deal with liability, taxes, and estate planning.

— Liability —

Under some structures, you will be able to shield your personal wealth from a liability judgment against the vineyard or winery. The entire assets of the vineyard or winery will still be at risk, but any personal assets you have outside the operation, such as a house, stock, investments, or another business, will remain separate.

Your personal wealth also could be shielded if the vineyard or winery declared bankruptcy, although that's not a given. If an operation's cash flow or profitability are not enough to support a loan, a lender will ask for a personal co-signer or co-guarantor. In that case, that co-guarantor's personal wealth is at risk up to the value of the loan.

— Taxes —

C Corporations are able to deduct certain operating expenses such as health insurance, cars, and housing for working owners and other employees, which may not be deductible by an S Corporation. Also, the corporate federal income tax rate is 15% on the first $50,000 of taxable income, compared to a range of 15% to 39.6% for individuals.

On the other hand, a disadvantage of fully incorporating is that corporate profits and the proceeds of the sale of corporate assets are taxed at the corporate level and again as individual income when they are distributed as dividends. This concerns only C Corporations and is a key reason why S Corporations are so popular.

— Estate planning —

The rules are that you can pass $10,000 tax-free to each of your heirs each year. Beyond that, you can give a total of $600,000 before inheritance taxes kick in. By forming a corporation or partnership, you can issue stock that can be sold or gifted much easier than if you had to break off a piece of land or facilities each time you wanted to pass wealth on to an heir. In addition, just the fact that you are going through this process makes you think about these things, which in some cases may be the most valuable part of the exercise.

"The most common mistake I see is that people don't start estate planning early enough," says Mike Fisher, a CPA and partner in the St. Helena accounting firm of Motto, Kryla & Fisher.

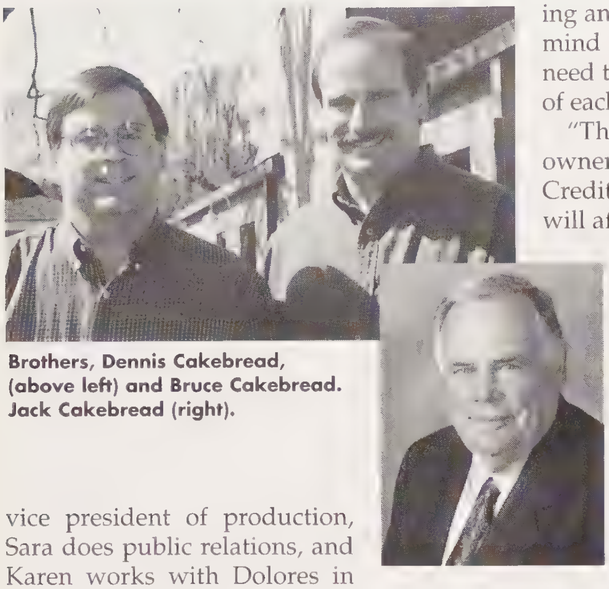
One advantage of starting estate planning early is that you have more years in which to pass $10,000 along. Another advantage is that the $600,000 limit is much more generous early on, points out Jon Dal Poggetto, a CPA and managing partner of the Santa Rosa accounting firm Dal Poggetto & Co. "If you have an estate that increases in value by 7.2% a year, it will double in value every 10 years. If it's worth $600,000 and you gift it now, the entire estate is tax-free. But if you wait 20 years, the estate will be worth $2.4 million, and an estate tax will be levied on $1.8 million."

Of course, you don't want to give away your entire estate now, but the point is made. You can give each of your heirs a portion of your estate, and keep some for yourself. You'll lower your estate's tax liability at the time of your death, yet have plenty to live on. You'll also be able to give tax-free another $10,000 each year to each heir.

Another advantage is that the $600,000 may not be valued as such by the Internal Revenue Service. "Look at it from an heir's perspective," says Dal Poggetto. "If no one owns majority control, a given heir has no control over how his or her share of the business is managed. Owning $600,000 of a $5 million business is not as good as owning a $600,000 business outright, where you could make all of the decisions.

"The IRS recognizes that and will allow what it calls a minority interest discount. If you assume that discount is 50%, someone could give up to $1.2 million of a business tax-free to an heir as long as that amount is not a majority of the business's value."

"This is a very common strategy," agrees Fisher. "The IRS might question the percentage of the discount, but doesn't question that a discount is due." Fisher adds that giving away too much too early is something to be aware of, but is rarely a problem. "Usually, that's the first thing parents are afraid of, so if anything they're usually overly conservative." ■



Brothers, Dennis Cakebread, (above left) and Bruce Cakebread. Jack Cakebread (right).

vice president of production, Sara does public relations, and Karen works with Dolores in hospitality and special events."

After many years in business, growers/vintners and their spouses, heirs, and investors often end up with partial ownership of several business structures, each with its own books and bank accounts. If you're thinking about changing an ownership structure, keep in mind that your loan officer will need to know the nature and extent of each of your various entities.

"There's no need to combine ownership," explains Carli of Farm Credit, "but each of the entities will affect the others. A loan officer will need to know that one won't impact another negatively. And in other situations, a loan officer might be able to approve a loan if the consolidated strength of all entities provides a base for extending credit.

"In those situations, we will consolidate balance sheets and income statements between entities. The need to consolidate your level of ownership in several entities is an important point to remember as you form these new business structures. It helps your lender if the balance sheets are of the same date and presentation method in relation to valuations."

Examples of situations usually requiring consolidation of financial information in this way include entities having subsidiary operations, farm corporations having controlling stockholders, partnerships with an individual general partner, and loan applicants with third-party financial backers.

Though all these issues are important, Cakebread notes that financial issues shouldn't be allowed to override family considerations.

"Without Dolores, none of this would have been possible. While I was getting the winery started, she was in Oakland running our other business. I'd go there each night and help finish up, and she'd be here each weekend helping out. Dolores and I are going on 47 years of marriage, and that's not bad. One of the things that comes out of working with family is that this is a team. Everybody's committed to it. You shouldn't let taxes or liability or inheritance be the sole reason to do any of this. What you end up with has to work for your family, too." ■

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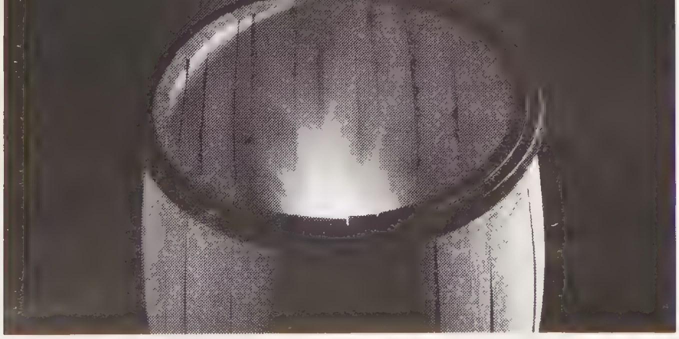

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SONOMA COUNTY'S MISTRAL

Tasting flights boost wine sales

Photo by Fred Lyon

by Millie Howie

Wine is almost always better when enjoyed with food. The exploration of flavor matches and mis-matches in both food and wine is one of the pleasures of life, and it can be practiced by anyone, from the patio barbecue crowd to those who regularly enjoy prix fixe menus. One Sonoma County restaurant which has made tastings and pairings a regular feature is Mistral in Santa Rosa, CA.

In 1996, Michael Hirschberg, owner of Mistral, transformed his popular Ristorante Siena (dedicated to fine Italian cookery) into Mistral, which celebrates the cuisine and lifestyle of the region Hirschberg calls the "Mediterranean Rim," with French, Spanish, and Italian roots. "When we started Mistral we did a lot of thinking," recalls Hirschberg. "What did we want to do with the restaurant to make it truly different? The perfect answer would be to do wine dinners every day, but that is not realistic. Because this is a large restaurant (100 seats), we have to present a broad spectrum of food and wine choices.

"Many ideas had been taking shape in my head during the last few months of Siena," he explains. "One had been prompted by the catering events we had been doing at Sonoma-Cutrer Vineyards, where owner Brice Jones introduced me to the word 'flights.' Then on a visit to New York City a friend took me to a little establishment with a *cruvinet* that covered an entire wall. They offered nothing but two-ounce samples of a myriad of wines and even bourbons and scotches. I thought that was neat, but much more elaborate than I wanted."

As Mistral came into being, Hirschberg and Chef Sheila Parrott developed "tasting flights" — groupings of samples of several wines. At first the flights were served on a paper placemat with circles indicating where the wine glasses should be placed. This arrangement made it awkward for the servers to pour and took up too much space on the tables.

"One day I was talking with John Ash, and he was describing how pairing was done at the Fetzer Food Center, using a little square tray with four holes for glasses. He sent me a sample, and I discussed the idea with my brother-in-law, Tim Jeffery, who is a woodworker. We decided three small glasses in a row would be practical, and he designed and made our wine service trays."

Next, Hirschberg searched for appropriate glasses to accommodate the two-ounce pours. He wanted a serious glass, but not a big balloon. He finally settled on a eight-ounce Libby glass, with a small base and modified chimney. "You can get your nose into it, and it has room to swirl a little bit," he says. The wait staff suggested that a slot be added to the tray to hold a card identifying the wines.

How the tasting flights work

During dinner service, after the customers are seated, Hirschberg or one of the wait staff approaches the table and presents, along with the wine list, a special card offering nine wine flights and one flight of microbrewed beers on tap.

"We don't want to bore people, so we simply ask if the patron knows about the tasting flights, and if not we describe the idea briefly. We want people to think of it as a new, enjoyable way to try a variety of wines and have some fun."

The tasting flights offer three samples of the same varietal: Sauvignon Blanc, Chardonnay, sparkling, Spanish, Zinfandel, red Rhone, Merlot, Pinot Noir, Sangiovese, and the beers. The restaurant also offers a dessert flight, but Hirschberg plans to move it to the dessert menu and is changing some of the other presentations as well.

Freshness is assured in the pours, since any partial bottles of wine remaining at the end of the day are protected by a layer of nitrogen.

"The Zinfandel flight has always been the most popular," Hirschberg says. "Among the whites, Sauvignon Blanc and Chardonnay are ordered about equally. We had a blush flight, but it never took off, and the Spanish flight sells very slowly, so I am rethinking that. Diners most often select the sparkling group when they are celebrating something special."

In selecting wines for the samplers, Hirschberg looks first for varieties he feels are "food friendly" and not too expensive. "I like to pour wines that are not terribly ostentatious, without considering someone's rating or point system," he explains. "I'd like to try some higher-end wines, and really want to do a Syrah or Shiraz trio, but they're too expensive, and you meet with resistance if the price of the three glasses goes above $10."

The tasting flights have eliminated the need for a house red and a house white. If a patron asks simply for a glass of red or white, the server offers the list of wines by the glass or suggests the tasting flight.

Restaurant guests also have the option of picking wines from the by-the-glass list to create their own flight of three. Because fewer people order wine with lunch, the flight card is presented with the menu without comment.

In addition to the pre-set tasting flights, Mistral features a special tasting dinner each evening, which sometimes begins with a sparkling wine or sherry and includes two flights of three wines. Usually three whites are paired with the first course and three reds with the main course, although sometimes Hirschberg likes to mix red and white in a single flight. (Dinner and the wine flights are priced separately.)

The season of the year and the checkbook help define what the pairings will be for the tasting dinners. Often Parrott and Hirschberg work backwards, starting with wines they want to feature and developing food combinations that go well with them.

"Sometimes," Hirschberg admits, "the flavors will challenge the wine, and you make remarkable discoveries about pairing multi-flavored foods with a high-flavor wine. Some things you know are going to work, but the fun lies in discovering matches you never thought would even be palatable."

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Hirschberg shuns ostentatiousness at two wine seminars Mistral offers each month, which may be combined with an optional buffet dinner of specialties designed to complement the wines discussed. There is a $30 charge for the seminar, and the cost of the dinner is an additional $20. The seminars are usually limited to eight people, and no wine snob or wine geek talk is permitted.

The key: Training

According to Hirschberg, all the innovations at Mistral, which include wine seminars and special event dinners, in addition to the tasting flights, succeed because of staff training. Before a new person is hired, Hirschberg gives him or her a three-part wine and food quiz covering the fine points of service.

The staff meets before each shift, at 10:30 a.m and 5:00 p.m. to sample new dishes and suggested wines. There are also staff tastings when new wines are added to the cellar. Frequently, five or six of the wait staff go on a field trip to a winery. Chef Parrott, who joined Hirschberg in 1985, prepares the food to take along for "on the road" mix and match experiments. After each tasting dinner, the staff is served the same foods and wine and given a chance to discuss the matches.

Letting the public know

There is no shortage of information available to the public about the various food and wine pairings at Mistral. Hirschberg mails a quarterly newsletter, called "A Tavola," to about 6,000 customers. A "Look What's Happening" flier announces upcoming events, and the usual "Chef's Specials" insert of the evening's special offerings is tucked inside the menu. Customers can take home free mini-reproductions of the daily menus.

Effect on Sales

Hirschberg considers the tasting flight part of the by-the-glass program, so sales are not evaluated separately. "We do know, simply from observation," he offers, "that on Friday and Saturday nights, about half the tables in the restaurant order the flights. We also know, that once a wine is placed in a flight, we need to have at least two cases on hand to assure that we don't run out.

"Overall, I know the flights have increased wine sales and stock turns over more rapidly. When the restaurant was Siena, monthly wine sales were about $14,000 to $15,000. Now wine sales are closer to $20,000, and we seem to be selling noticeably higher quality wines" ■

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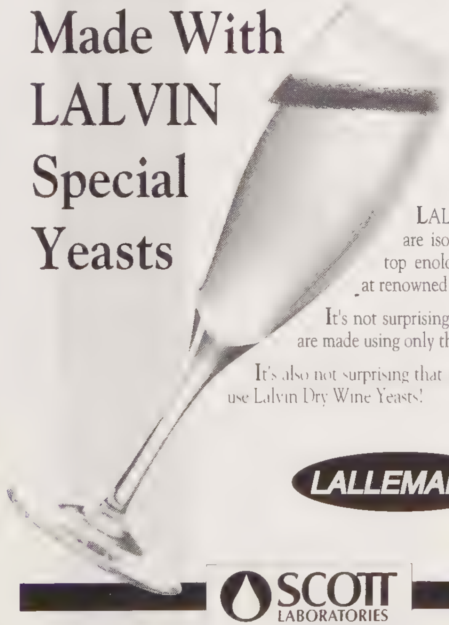

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MLF IN BARREL IMPACTS RED WINE STYLE

by Eleanor Heald

Throughout the wine industry worldwide, there are yea-sayers and nay-sayers on the practice of malolactic fermentation (MLF) of red wines in barrel. Recent French research by Nicolas Vivas, Aline Lonvaud-Funel, Yves Glories, and Monique Augustin (see related ***PWV*** story page 68) suggests that MLF in barrel has discernible effects on color, flavor, tannins, and longevity. It also affects organoleptic perception of roundness, richness, and fullness. ***PWV*** asked several California winemakers how they manage MLF of red wines in barrel.

◆

ACACIA WINERY

Napa, CA

David Lattin, winemaker

Pinot Noir and Zinfandel are routinely transferred to one-third new Burgundy-coopered barrels at -1.5° Brix to undergo MLF in barrel. Winemaker David Lattin says that, while Acacia's procedure varies from wine to wine, press wine is generally cleaned up and added back at levels of up to 20%, depending on the balance of the free run.

SO_2 is not added at the crusher, and approximately one-quarter of primary fermentation is uninoculated. Yeast inoculums are Lalvin RC212, BM45, and UCD522. MLF is uninoculated. Acid adjustments for flavor balance, if needed, are made to the fermenter with tartaric acid and occasionally at pressing.

After pressing, wine is settled overnight and goes into barrel with a maximum of 25% fermentation lees. "We want a slow MLF in barrel to delay the time when the first SO_2 is added," Lattin explains.

Most barrels complete MLF in January and are racked for the first time in April or May. Reserve wines are racked in July. Blending is done at this time also. Regular bottlings are returned to barrel for an additional two months, reserves for six months.

During MLF, barrels are topped and tasted every two to three weeks. When malic acid levels are less than 0.1g/L and MLF activity in barrels ceases, a first SO_2 addition of 30 to 50ppm (depending on the wine) is made.

Wines are filtered only if they don't settle clear by the final racking.

"We like the flavor and aroma effects of the ML bacteria on oak components," Lattin contends. "They seem to produce a meatier, smokier Pinot Noir. Additionally, a long, slow MLF in barrel protects wine longer without having to add SO_2. The longer we can delay SO_2 addition, the more stable the color, which can be a problem for Carneros Pinot Noir. We sense more complex tannins increasing the wine's richness. Adding SO_2 early, seems to interrupt this process."

Lattin notes drawbacks to the method. SO_2 additions to barrel are slow and less precise. He has occasionally observed big color losses post-MLF due, he believes, to a "fining" action as lees, kept in suspension through microbial activity, settle.

◆

GEYSER PEAK WINERY

Geyserville, CA

Daryl Groom, winemaker

To attain the desired style within the Geyser Peak red wine program, completing fermentation with full malolactic fermentation (MLF) in barrel is a routine practice. American oak is the chosen cooperage, and the technique is employed with 30% of regular Cabernet Sauvignon, all Reserve Cabernet Sauvignon, 66% of Venezia Cabernet Sauvignon, half of the Reserve Shiraz, approximately 30% of Zinfandel, and 10% of the Merlot.

With Geyser Peak Reserve Shiraz, winemaker Daryl Groom (former senior red winemaker at Penfolds in Australia) maintains that he's not trying to duplicate the style of Penfolds Grange. "With Grange, all lots complete primary fermentation in barrel and undergo full MLF in barrel," explains Groom. "With this technique, Penfolds Grange takes on smoky, chary elements in the wine and that works well with rich, sweet fruit. When fruit is more elegant, as it is with sources of Geyser Peak Syrah, we want to avoid overt wood characters. We do only enough barrel fermentation and MLF in barrel to complex the wine."

The method is employed with fruit that did not receive SO_2 at the crusher, but was inoculated with Prise de Mousse yeast.

Wine goes to barrel around 6° Brix on fine lees. Coming off upright fermenters between 1° to 2° Brix and rotary fermenters at higher Brix, free run is drained into tank and mixed as the tank fills with a 0.5% inoculum blend of either of two ML cultures, MCW and Simi. Transfer to barrel is made the same day. Some fermentation lees go to barrel because free run is cloudy at this point.

"The decision to inoculate for MLF stems from our preference to blend wines early to classify them in December and not later than January," Groom says. "At that time, we designate reserve Cabernet Sauvignon from regular and the like. Without MLF inoculation, some wines do not complete MLF until spring and we couldn't do the blends."

Once dryness is attained, wine sits on light lees in barrel for about one month — the time it takes MLF to complete. This barreled wine is tasted weekly to detect development of objectionable characters. Once MLF is complete in barrels, wine is racked off the lees to tank, 15ppm SO_2 is added, and if needed, acid is adjusted with tartaric acid to taste and balance, generally 0.62 to 0.63 TA. Barrels are washed and wine is returned to barrel.

Wine remains in barrel another month and is racked again. Blends are assembled at this time. Wine is given a rough DE filtration and returned to barrel.

Groom rejects the idea that doing a DE filtration after only a few months strips wines of components that add complexity later on. "I suppose one could argue this, but we don't see that having a few solids present does anything," he contends. "We like the wine to be relatively clean in barrel with total SO_2 levels up to about 50 to 60ppm. If you look at our reserve wines, they have some of the darkest color coming out of Alexander Valley. They have the right balance of color and flavor."

In the 1996 harvest, Groom conducted an experiment from one rotary fermenter. One-half of the free run wine at 6.5° Brix was inoculated for MLF by the procedure described above and transferred to new American oak barrels. The other half completed fermentation and MLF in tank.

"When we classified the lots, the barrel regime wines ranked much higher in our opinion," Groom reports. "The wine is fuller and richer with sweeter fruit character due to oak integration. On the palate, the wine has greater depth and is more complex."

In the 1997 harvest, Groom will enter a third element into another experiment by taking a portion of a lot to dryness, then inoculating for MLF before barreling.

✣

ROBERT MONDAVI WINERY

Oakville, CA

Heather Pyle, varietal program manager

All red wines for the Napa Valley-Robert Mondavi Winery program (La Famiglia wines can vary) in Oakville, undergo MLF in barrel. Routinely, red grapes get 35 to 45ppm SO_2 at the crusher. Rarely, but if needed, acid adjustments by taste are made at this time.

Pinot Noir primary fermentation is uninoculated. For other reds, half of the primary fermentation is uninoculated. Seventy-five percent of the remainder is inoculated with Prise de Mousse, and the remaining 25% is inoculated with a mix of yeast cultures.

Pressing of Pinot Noir is done post dryness after 15 to 20 days total skin contact. The longest skin contact time is for Cabernet Sauvignon, which can be

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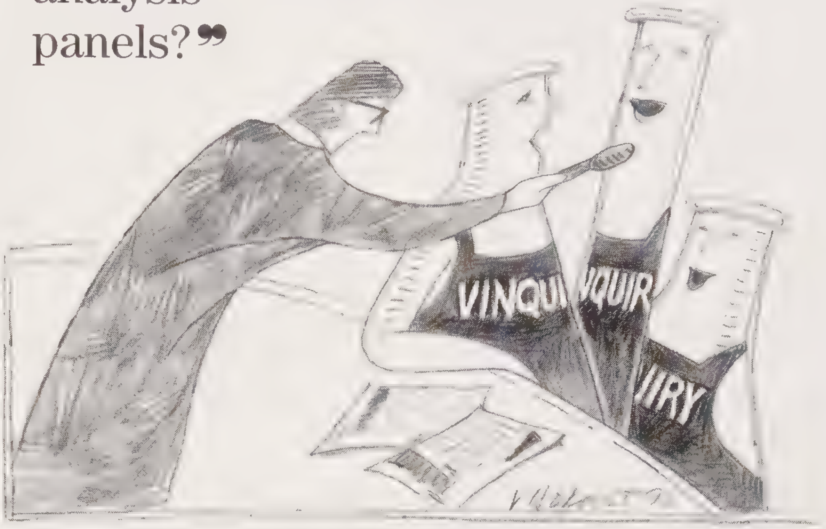

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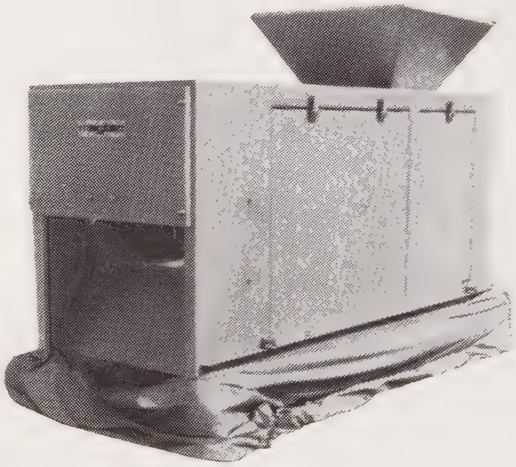

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30 to 40 days. On average, half of the press wine is retained.

Pinot Noir is not inoculated for MLF. For other reds, half of the wine is uninoculated, with the remainder inoculated to insure timely completion with a Mondavi liquid culture added after pressing as tanks are filled.

Pyle reports that Merlot presents the most difficulty in completing MLF. Yeast culture lots lag, and yeast nutrient problems have been considered as the likely cause.

Wine is barreled on fine lees in 30% to 40% new French oak from a variety of coopers and forests. Transport barrels are used for Pinot Noir, while all other reds are aged in Chateau barrels.

Pinot Noir generally completes MLF in four to six weeks. All Bordeaux varietals and Zinfandel finish in approximately three months.

While MLF is ongoing, wines are tasted and topped every other week. Malic acid levels are checked enzymatically and once MLF is complete (malic levels are <0.1g/L), free SO_2 is added within two weeks — 10ppm for Pinot Noir and 20+ppm for Bordeaux varieties and Zinfandel. These latter wines are racked in March. Reserve wines are racked quarterly, others twice annually or more as time permits and are bottled unfiltered.

Pinot Noir remains in barrel for 10 months and is often not racked during this period except by way of preliminary blending. The wine may be racked barrel to barrel off fining lees or to a tank. Blending of Cabernet Sauvignon Reserve, Oakville Cabernet Sauvignon, Merlot, and Zinfandel is done in June or July of the first year. After blending in April, Pinot Noir is returned to barrel for two to six more months. All Cabernet Sauvignon-type wines get an additional 12 months in barrel.

Pyle believes the regime outlined above doubles as a complexing agent offering better barrel integration. "Wines are not as simple in their fruit expression and are more complex and rounder on the palate," she affirms. "Extended maceration wines appear to age better in the long term. We believe we win in the end, five years later."

✣

SAINTSBURY

Napa, CA

Byron Kosuge, winemaker

All of the Pinot Noir made at Saintsbury undergoes MLF in barrel. The wines are almost always dry at pressing. Free run and press wines go directly to barrel but are kept separate until blending the following summer.

Under normal circumstances, no SO_2 is added prior to fermentation. About 10% of the primary fermentations are uninoculated. A variety of commercial yeast strains are used in the inoculated lots; among them are Pasteur Champagne, Maurivin B, RA-17, D254, L2056, and 71B.

The wines are inoculated for MLF as they go to barrel using an isolate from Simi Winery. Inoculated MLF is preferred in order to get the wines through MLF fairly quickly. "There is evidence that prolonged malolactic, or delayed

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sulfuring, helps stabilize color and tannin in red wines, but because the flavors of Pinot Noir are so sensitive to oxidation, we don't feel comfortable leaving the wines without sulfur much past the end of December," says winemaker Byron Kosuge. "I'd rather choose to delay sulfuring than be compelled by sluggish malolactics."

For free-run fractions, as few lees as possible go to barrel. This is done both so that there will be minimal "lees fining" during MLF and ageing and so that the wines will be sufficiently clear, after only one racking, to be bottled unfiltered the following summer.

"Microbial activity keeps lees in suspension," Kosuge notes, "which can then 'fine' the wine as settling occurs. In practice, at least in our cellar, the free run wines are clean enough when they go to barrel that we've not observed this phenomenon. Press wines, which are much dirtier and slower to settle, seem to lose color."

Wines generally go to barrel between mid-September and early October and finish MLF by mid-November. A combination of 30% new French François Frères and Seguin Moreau cooperage with various woods and toast levels (mostly medium to heavy) are chosen for the barrel program.

Barreled wines are sampled, checked, and retopped every 10 to 14 days during MLF. Upon completion of MLF, SO_2 is added at the rate of 65 to 75 mg/L total, yielding 35 to 40 mg/L free. During barrel ageing, the free SO_2 will drop to 17 to 20 mg/L. For the free-run portions, SO_2 is added directly to barrel, and unless the lot has unusually heavy lees, it is not racked. Press fractions are racked both during and after MLF to clean them up as much as possible before ageing.

Acid adjustments are made as early as possible in the fermenter, but often a bit more is added post MLF. Tartaric acid is used for additions. Acidification is mostly a pH management tool early in the fermentation process, but as the wines go dry and begin malolactic, the emphasis switches to taste. "If the pH post MLF is within a reasonable range — between 3.5 and 3.8 — and the wine tastes good, then we're happy," Kosuge adds.

Depending upon the blend, the Pinot Noir stays in barrel from seven to 14 months. Silicon bungs are used, and the barrels are not topped further during ageing. When the free run wines are

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racked prior to blending the following summer, they are clean enough to bottle unfiltered. Press wines are usually filtered through acid-washed DE prior to incorporation into the blends. The Garnet and Carneros Pinot Noir blends are bottled right after racking and blending, and the Reserve Pinot Noir returns to barrel, to be bottled in November.

STONESTREET WINERY

Healdsburg, CA
Mike Westrick, winemaker

All reds — and this includes Pinot Noir, Merlot, Cabernet Franc, Petit Verdot, and Cabernet Sauvignon — undergo MLF in barrel at Stonestreet.

Wines that received 40ppm SO_2 at the crusher and were uninoculated for primary fermentation go to barrel after extended skin contact time of four to six weeks for Bordeaux varieties, and three to four weeks for Pinot Noir. The fraction of press wine retained depends on tasting the wine at pressing.

MCW ML-inoculum is added at pressing as necessary. "We want MLF to complete because our goal is to bottle wines unfiltered," winemaker Mike Westrick says.

Wines go to French oak barrels on light fermentation lees. Half the barrels for Pinot Noir are new. Bordeaux varietals are in 40% new oak and *Legacy*, a Bordeaux style blend, sees all new oak. Pinot Noir is barreled ten months and Bordeaux wines are barreled 18 to 20 months.

During MLF, wines are tasted and topped every two weeks. MLF for all red varietals generally completes by the second half of December. Wine is racked off ML lees about one week post-MLF, and the free SO_2 is adjusted to 20ppm. At this point, wines are slightly cloudy, but clear substantially after a second racking. Bordeaux varietals are racked aeratively four times during the first year. Pinot Noir is racked non-aeratively when the blend is made in February.

"Our primary objective with red wines is to bottle a microbiologically stable wine without filtration," Westrick states. "We believe that having red wine undergo MLF in barrel helps protect the wine. Since barrels can be topped, it is safer than doing MLF in a tank that might contain substantial amounts of oxygen." ■

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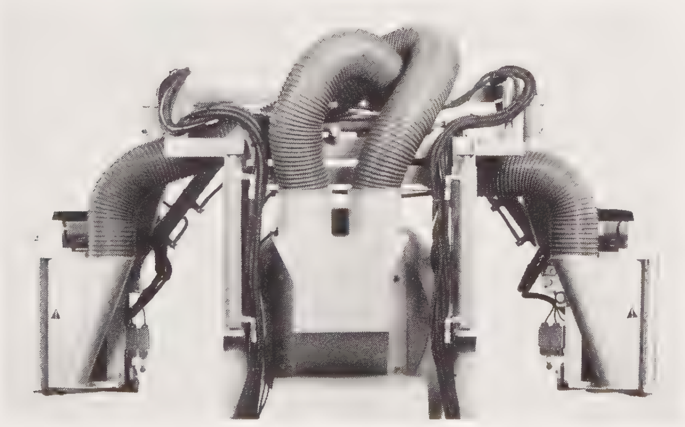

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NEW THINKING FOR THE NEW CENTURY

by Deborah Ranish,
The Personnel Perspective

Do you have someone on staff who can interpret labor law? Manage a sexual harassment claim? Terminate without fear of lawsuit? Hire new employees skillfully? Or train supervisors to manage effectively and legally?

Employment laws and regulations continue to grow in number and complexity. Many wineries cannot justify the costs associated with hiring a full-time human resources (HR) professional to ensure compliance in labor issues as well as act proactively to avoid labor law nightmares. Even the prospect of hiring a part-time HR worker cannot be justified from a bottom-line profitability standpoint for most wineries.

When does a winery decide it is time to bring on a full-time HR professional? In 1993, the Aegis Group conducted a survey which revealed that a full-time HR staff member is not fully efficient until the company has in its employ at least 110 employees. Even then, it may be difficult to get the level of expertise and specialization needed.

In the past, small wineries have often assigned the responsibilities for handling HR functions to a controller or general manager. Even in large wineries with fully developed HR departments, many department members lack the time to remain current with rapidly changing regulations, claims processing, and professional compliance. If the changing labor laws have become too great in number, too complex, and too time consuming for those individuals to manage effectively, how can a small winery handle these crucial needs?

One answer is in the growing field of outsourcing.

Rather than continuing to train their own employees to keep abreast of new regulations, small wineries can outsource — that is contract for HR services with a firm whose sole focus is to remain current with all the issues and complexities surrounding the field of human resources. This way, even the smallest winery can benefit from having access to HR professionals who have the most current expertise in the field.

Lorri Emmerich, general manager of Murphy-Goode Estate Winery (Geyserville, CA), has been outsourcing the winery's HR needs for five years. "As a small winery (85,000 cases/year), we do not have any one person who has the expertise, let alone the time, to be responsible for this area," states Emmerich. "No matter how much reading you do, it's very hard to keep up with the ever changing employment laws. Even one-day classes or seminars are of little help, because the laws change so fast."

Cakebread Cellars (Rutherford, CA) has been outsourcing its HR needs for several years now. Considering its size (65,000 cases/year), Cakebread Cellars could not justify hiring an in-house person, neither could the winery realistically find one person who possessed all of the skills required.

"Our experience with outsourcing has been excellent," remarks Peter Chiarella, president of Cakebread Cellars. "In no time at all, we audited our personnel practices and prepared an employee manual aimed at informing our personnel about their rights and benefits. This ensured our position as a lawful employer. This initial thrust was followed by ongoing surveillance of personnel policy, intervention with employee attitude, communication, and highly skilled recruitment. To say that we are pleased with our outsourced HR functions would be a gross understatement."

It also makes sense for employers to outsource the complex human resources functions from a cost standpoint.

Tad Sanders, CFO of 40,000 case/year Matanzas Creek Winery (Santa Rosa, CA) sees the cost benefits after having experience with outsourcing a variety of company needs. "I have used outside HR professionals in the same capacity our winery uses attorneys and other forms of legal counsel," says Sanders. "It is important to know your strengths and weaknesses in business; it is also important to know when you need the support of an HR professional to provide you with clear concise guidance through the myriad of HR issues."

Sanders also has recognized an additional benefit. "My experiences with outsourced HR professionals has been educational and supportive," adds Sanders, "as if we have been working together as principals in a business. I value highly the 'partner' relationship with the outsourced HR professionals I have used. They provide me access to a wealth of experience that's just a phone call away. They have definitely met the value-added test in my experience."

Outsourcing makes sense from a cost standpoint as well as a business partnership relationship. But it makes sense from a core competency angle too. Do wineries really want to be in the business of human resources? Does it drain company energies and resources to spend time, effort and money trying to maneuver through difficult human resources issues? Outsourcing allows companies to focus on what they do best and what speaks to the heart of their business, without diverting from the company mission and purpose.

Some wineries turn to human resources firms for outsourcing the entirety of their personnel needs; others elect to outsource one individual part such as legal compliance, recruitment, training and development, compensation, or any similarly related personnel function. International Data Corp. predicts that outsourcing will increase 60% by the end of this century.

Outsourcing in human resources provides employers with flexibility, better cost control, and up-to-date human resources information and guidance. It appears that the biggest advantage, however, is that outsourcing gives companies a significant competitive advantage by allowing them to concentrate on what they do best and what speaks to the nature of their business. ■

Deborah Ranish is an Associate and Human Resources Consultant of The Personnel Perspective, a human resources consulting, training, and executive search/recruiting firm in Santa Rosa, CA, tel: 707/576-7653.

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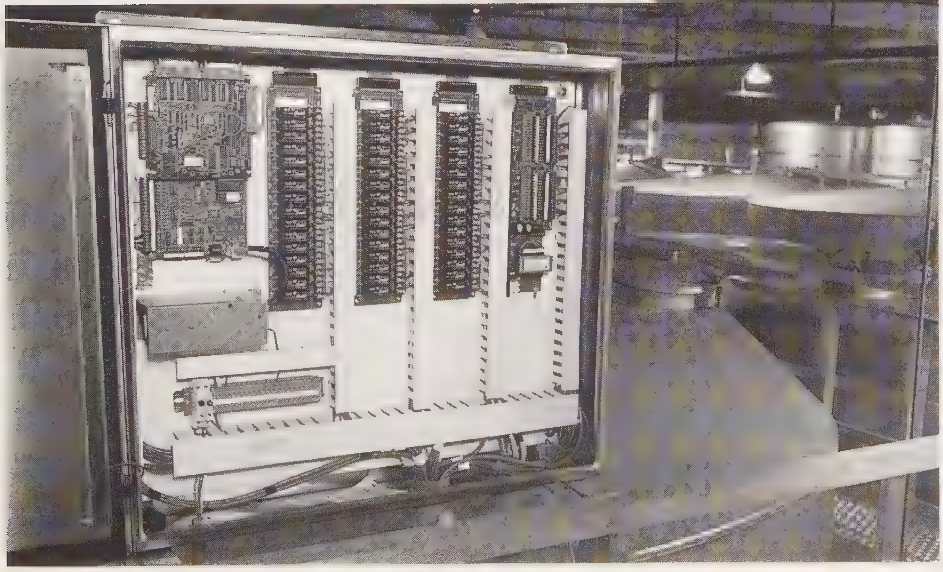
CHATEAU STE. MICHELLE

Benefits from automated refrigeration controls

When Chateau Ste. Michelle (one of three Stimson Lane Ltd. wineries in Washington state) sought an automated temperature control system for its Woodinville winery, the winemakers wanted controls that would improve efficiency by monitoring and adjusting the temperature of wine throughout the fermentation process.

Chateau Ste. Michelle's management found the answer with Logix Industrial Refrigeration Controls in nearby Kirkland, WA. Logix has extensive experience in refrigeration control applications for a variety of industries and major manufacturers, including grocery and cold storage distribution warehouses for Safeway and Associated Grocers; meat and seafood processing for Fletcher's Fine Foods and Weight Watchers; and fruit, juice, and beverage processing for Oregon Fruit Products, Pepsi-Cola, and Welch's.

Chateau Ste. Michelle staff visited a five-acre Safeway warehouse facility with 88 temperature control zones in nearby Bellevue, where a Logix system controls one of the largest cold storage and produce ripening buildings in the nation, handling 1,000 trucks per day, and serving 140 stores. The effectiveness of that system and the fact that the Logix software team could design features to meet the winery's special demands convinced them that Logix could meet their needs.



Chateau Ste. Michelle winemaker, Erik Olsen (right). Below: Logix control panel in winery tank room.

Chateau Ste. Michelle's new system

Logix's Winery Control System was installed at Chateau Ste. Michelle in time for the 1996 crush. The system precisely controls tank temperatures, helping to ensure wine quality, optimizes refrigeration machinery room operations, and reduces energy consumption. The system is extensively programmable, establishing temperature setpoints for various stages of fermentation. In addition, it includes a user-friendly reporting system, with real-time color graphics and practical, intuitive menus.

Winemaker Erik Olsen says Logix's ingenuity in planning the system has led to substantial improvements in winemaking operations. "You can make good wine without an automated control system, but the Logix system makes tank control much more precise."

The Chateau Ste. Michelle management team's high expectations for the system gave Logix some interesting challenges:

Challenge #1: The winemakers wanted a way to program temperature setpoints for each step of the fermentation process. The system needed to be dependable enough to monitor fermentation changes 24 hours/day and automatically change the temperature as needed.

The Logix system was equipped with a user-programmable set of seven temperature modes that could be assigned to each fermentation tank. Each temperature mode can be scheduled sequentially and implemented without manual supervision.

Challenge #2: Chateau Ste. Michelle wanted to use the system to monitor fermentation activity and automatically change fermentation set-points based on the fermentation rate.

The system was equipped with

"Automatic White Fermentation Mode" parameters. Fermenters are put on "Fermentation Start" after yeast is added to a tank. This mode allows the tank to warm up to a specified set-point which encourages yeast growth. The system monitors the rate of heat generated by the fermenting tank over a specified time interval. Once the fermentation is active, and the rate of heat generation hits a determined value, the system automatically changes the mode to a cooler "White Fermentation Mode." The mode set-points are determined by a winemaker based on the type of yeast used and the variety of grape juice fermented.

Challenge #3: Safeguards were needed to prevent overshooting of tank cooling set-points and to prevent icing during cold stabilization.

Duty cycling setpoints were established within the Logix system that cycle the opening of the refrigerant feed solenoids when the tank temperature approaches icing conditions.

Benefits of automated control

The staff at Chateau Ste. Michelle reports that the new system has greatly enhanced winery operations, saving time by improving efficiency and recordkeeping.

"The Logix control system flags each problem as it's happening," Olsen explains. "It records an alarm and makes sure that we acknowledge and correct the situation, even if we're off-site. It has led to greater efficiency by reducing the time spent on manual temperature checks and precautionary troubleshooting activity. By eliminating the need to do frequent checks of individual tanks, we have freed up time to focus on the fermentation process and other aspects of winery operation."

Logix president Jim Conant and chief software engineer Mike Ghan created a detailed plan for the system after conducting a thorough "needs discovery process" with winemakers. During installation, Ghan worked on-site to ensure a smooth start-up.

"It was great to have Ghan here during the installation," Olsen says. "He understood our needs and was eager to meet new challenges." Olsen especially likes the Logix system's flexibility in reporting information to the staff. The information is detailed, clearly presented, and very helpful in analyzing trends. Chateau Ste. Michelle has a complete printed history of control strategies used and results achieved during the 1996 wine fermentation process, a big help in determining the best utilization of the wine tanks.

The system's trend logging also provides the staff with graphs of temperatures and setpoints. Reports can be generated for periods of one day up to one-year. If a particular fermentation curve seems to have been especially successful, the reports can be used to duplicate conditions for another batch.

"The system helps us make quicker, better decisions, by giving us the necessary information," Olsen says. "This higher level of control can help us to

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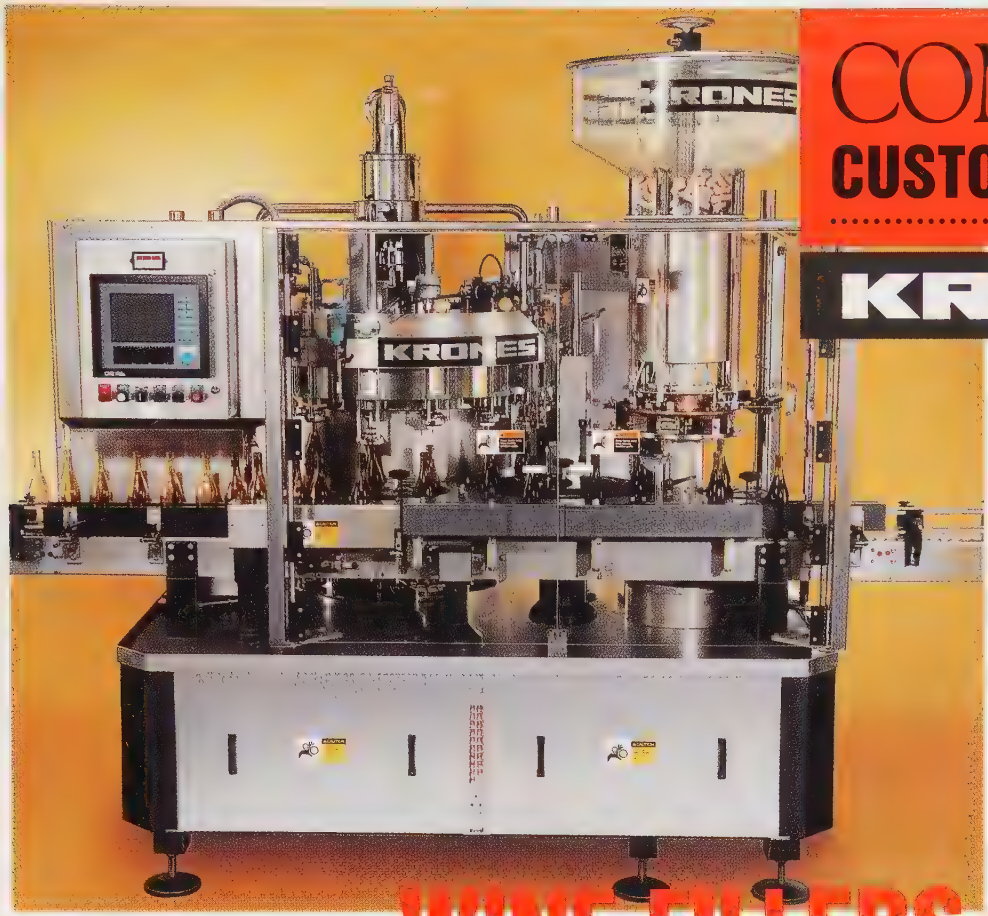

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enhance the wine quality and repeat our successes.

"Being able to fine-tune tank temperatures permits more precise control of the winemaking process." The Logix system allows for temperature controls within plus-or-minus 0.1°F.

Chateau Ste. Michelle is saving money with improved control strategies. Michael Weeks, winery maintenance supervisor, reports that, with the Logix system, the condenser pressure has been lowered, and the tank cooling load regulated, allowing him to raise the suction temperature by 10° to 12°F.

Other horsepower reductions are achieved in the cycling of evaporator fans and use of outside air exchange. This has allowed the winery to frequently reduce the compressor horsepower requirements by 50%, resulting in substantial energy savings. Olsen notes that improvements such as these would be difficult without the control and reporting functions of the Logix system, since required manual data collection would be impractical.

For Chateau Ste. Michelle, flexibility was a top priority when selecting an automated system. The winery needed equipment that could be easily adapted to changing needs.

Integration of the complex operation of the ammonia compressor engine room with tank temperature controls was straightforward, and the two winery areas now operate in harmony. (See sidebar.)

Other custom features including barrel room temperature control, monitoring of wastewater pH levels to meet county sewage requirements, monitoring the nitrogen generator that fills the nitrogen reservoir for use on the bottling line, and controlling temperatures in the case goods warehouse.

Now, the Chateau Ste. Michelle staff is working with Logix to discover other winery processes that can be linked into the system, increasing quality and efficiency. "We can count on Logix for fast, quality work whenever we need to adjust or upgrade the system," explains Olsen.

Chateau Ste. Michelle owner Stimson Lane is so pleased with the results at that winery that Logix will install a Winery Control System at the Chateau Ste. Michelle Canoe Ridge Estate Winery, Paterson, WA, also owned by Stimson Lane, in time for the 1997 crush. The red wine facility will require two temperature probes for each tank (one for liquid tanks and one for the cap). Over half of the fermentation tanks will require both cooling and heating circuit control. Temperature and humidity control in barrel rooms will also be included in the project. ■

Refrigeration machinery room efficiencies

Ammonia compressor engine room staff and winemaking staff at Chateau Ste. Michelle are happy with the Logix's alarm system, which automatically alerts winery personnel at home if there is a problem with tanks or the refrigeration engine room during the night.

When alarms are triggered, the Logix system immediately notifies staff by activating pagers or calling a phone with voice annunciation of the alarms. This allows individuals on duty to restart important systems immediately from their personal computers at home.

Prior to installation of the Logix Winery Control System, winemakers spent a lot of time during crush in the ammonia compressor engine room monitoring pressures and temperatures to assess the capacity of the plant to provide the required cooling for fermentation.

Michael Weeks reports that the Logix system has made it possible to automatically operate the refrigeration system at near optimal efficiency without personal monitoring. "This frees up our time to concentrate on making wine — not checking on the refrigeration system." ■

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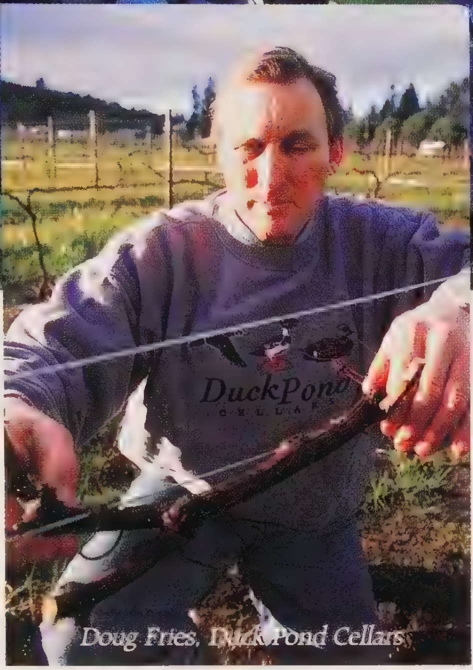

Doug Fries, Duck Pond Cellars

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Zinfandel

How many ways to skin a Zin?

by Eleanor & Ray Heald

Photo by Rhoda Stewart

*A harvest T-shirt from the 1995 vintage inspiring the crew at Steele Wines noted, "There are a lot of ways to skin a Zin." The slogan on the back of this T-shirt, with a label of the DuPratt Vineyard Zin on the front, caught **PWV**'s eye and got us enthused.*

Watch dogs of California wine sales talk about "hot brands." But regardless of brand, Zinfandel is a "hot" wine today. Zin's in! Only a few short years ago, Zinfandel's origin was a hot topic. Today, scarcity of old vines — those 50 years old and older — is a critical issue. Zinfandel is produced in a myriad of styles, from light and fruity to intense and extracted. Consumers are impressed with the number of ways Zin's been skinned.

Just how much is Zinfandel style influenced by elements such as vineyard location, soil profile, clonal selection, vine age, cellar techniques, or a preferred house style of red wine? ***PWV*** asked these questions and others of California winemakers for this exclusive varietal review.

Wines of the 1990s

St. Francis has only been making Zinfandel since 1989. Winemaker Tom Mackey believes he's still on a learning curve. St. Francis sources fruit from six vineyards, three in Sonoma Valley, one in Chalk Hill, and two in Dry Creek Valley. The youngest of these is about 50 years old and the oldest tops 100 years. "If at all possible, we prefer the older, head-trained vineyards with smaller yields (one to three tons/acre) and more concentrated flavors," Mackey says.

If the year and fruit cooperate, the winery makes a bigger style Zin with alcohol over 14%. Deep color is insured with the addition of Alicanté Bouchet and Petite Sirah. Raspberry, pepper (from the blending varietals), and sometimes chocolate are the principal aromas and flavors. "We're going for intensity when possible; it's the style we're shooting for," Mackey maintains.

Produced similarly to Cabernet Sauvignon, St. Francis Zinfandel is aged in new American oak for 14 to 15 months and is not fined or filtered. Methodology is the same for a reserve wine designated Pagani Vineyard (Sonoma Valley) from 70- to 100-year-old vines.

Since old vine Zinfandel vineyards are scarce, St. Francis is holding on to those it has and recently acquired Nun's Canyon Vineyard, 115 acres of prime hillside land in the Mayacamas Mountains (Sonoma County). In addition to Zinfandel (14 acres), this site is planted to Cabernet Sauvignon and Merlot. Mackey believes that the red volcanic soil is ideally suited to all three varietals.

At Robert Mondavi Winery, Jim Moore says the situation is similar to St. Francis'. The winery's first commercial release of varietal Zinfandel was 1992. It's a blend of wines from diverse vineyards. Currently, all grapes are purchased, but there's a dedicated planting of head-pruned Zinfandel from an old-clone source in the winery-owned ToKalon Vineyard.

FEATURED WINEMAKERS:

Nancy Ortega Walker, winemaker,
Brutocao Vineyards & Cellars, Hopland, CA

Larry Levin, winemaker,
Dry Creek Vineyard, Healdsburg, CA

Peter Franus, owner/winemaker,
Peter Franus Wine Co., Napa, CA

David Hastings, winemaker,
J. Fritz Winery, Cloverdale, CA

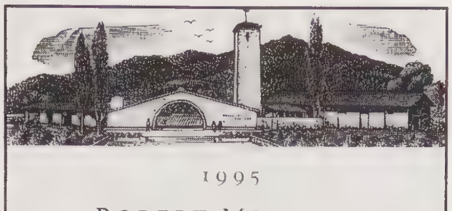
Jim Moore, production enologist,
Robert Mondavi Winery, Oakville, CA

Mark Swain, winemaker,
Round Hill Cellars, St. Helena, CA

Tom Mackey, winemaker,
St. Francis Vineyards & Winery, Kenwood, CA

Leon & Paul Sobon, winemakers
Sobon Estate, Plymouth, CA

Jed Steele, owner/winemaker,
Steele Wines, Kelseyville, CA



1995 • Napa Valley

"We've been trying to hit our stride in both defining a style and securing long-term sourcing," Moore points out. "It is not our intention to vineyard designate, but rather to have the wine represent the Robert Mondavi house style of reds. We're looking for synergy from diverse components."

As Robert Mondavi Winery refines its Zinfandel style, it has bounced around showing some extremes. In 1992, Cabernet Sauvignon production techniques were used for Zinfandel. By 1994, the wine shifted toward a lower-alcohol (<14% alcohol, about 13.8%) style in response to the 14.5% alcohol in the 1993 bottling.

In 1995, optimum maturity was a goal. The wine has a riper fruit profile and consequently higher alcohol. It stands out as a fleshier wine with generic berry components, plum, and stone fruit elements. "We don't seem to get the spice components that characterize some Zinfandels," Moore adds. "What little black pepper there is stems from a Howell Mountain source."

As Robert Mondavi has gone out to secure its own distinct sources, it is discovering unique vineyard characters of alluvial valley floors to be different from mountain-grown fruit. One element that all Mondavi's varied sources have in common is rootstock. "About 95% of the vines are on St. George, and we find that this rootstock wants to limit production," says David Caselli, Robert Mondavi Winery Napa Valley grower relations manager. "Another factor limiting production is that most older Zinfandel vineyards are dry farmed."

"We want Zinfandel in the Robert Mondavi portfolio to find its own way," Moore continues. "Style-wise, it's now positioned at the mid-point between our Pinot Noir and Cabernet Sauvignon. Initially, the mind set was to make it just like Cabernet, but we've evolved to treating it appropriately and not necessarily in our 'classical' red wine models. To showcase fruit qualities, we stress minimal use of oak. The desired effect is some vanilla well in the background."

Fondness for Carignane

Two different vineyards in Dry Creek Valley are the sources of Zinfandel for J. Fritz Winery. A valley floor site has 100-year-old vines of mixed and mystery varietals on deep, gravely soil. It yields grapes with raspberry and blackberry aromas and flavors.

1994 • Old Vine
Dry Creek Valley

The second J. Fritz vineyard is a canyon parcel on red clay. Wine from this location showcases berry characters with spicy, peppery notes. Its characteristics complement those from the valley vineyard. The canyon vineyard on St. George rootstock has been made virtually 100% varietal as the grower has chosen to weed out other-than-Zinfandel vines through T-budding.

In addition to these sources, old-vine Carignane and old-vine Zinfandel are purchased separately as components for the blend. For the chosen style, winemaker David Hastings said the tendency is to use a greater proportion of Carignane rather than Petite Sirah.

Classic red wine models

Peter Franus bottles three different Zinfandels. A Napa Valley designate is a blend from a few vineyards (varying from year to year) and contains Carignane. The flagship is Brandlin Ranch made from 60- to 70-year-old vines, head-trained on St. George rootstock and grown on Mount Veeder.

FRANUS

1994 • Mount Veeder, Brandlin Ranch
Napa Valley

Hendry Vineyard is just off the valley floor, and the fruit source for the third Zinfandel.

Each bottling is more reflective of the grape source than winemaking. Brandlin and Hendry are aged in French oak, one-third new each year. The Napa Valley Zinfandel sees some American oak.

Brandlin is powerful, dense, concentrated, and sometimes a brooding wine that's slower to evolve. It consistently has allspice, pepper, minerally notes, and an almost mushroomy component. "Because this source holds acidity well, I find that I'm letting the sugars creep up a little (±24.5° Brix) year by year," Franus reports. "This also tames the tannins and adds some suppleness. The riper tannins are rounder and less astringent. Tannin and acidity are synergistic. With higher acidity, the harder and more tannic the mouthfeel becomes."

Hendry is similar to Brandlin in aromas and flavors, but with a sweeter blackberry jam component. It is more forward, supple, and approachable earlier in its life. Because the vineyard sources of the Napa Valley blend can vary from one vintage to another, Franus hesitates to put descriptor stamps on this bottling, but does say it's the lightest of the three.

ROUND HILL
VINEYARDS
1994 • Napa Valley

Three out of four vineyard sources for the Napa Valley Round Hill Cellars Zinfandel, are hillside plantings in the Howell Mountains and western foothills of St. Helena. Vines range in age from 20 to 85 years old with one planting of 100+ years.

In contrast to the Bordeaux model for red wine used elsewhere, vineyard lots are kept separate until blending which occurs as the wines complete proper barrel ageing. The blends may be barrel-aged further as needed.

"The blending components represent a broad spectrum of aromas and flavors from red and black raspberry to plums, and from black pepper to nutmeg and clove," says winemaker Mark Swain.

SOBON ESTATE
ESTABLISHED
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1856
1994 • Lubenko
Fiddletown

Amador influences

Leon Sobon, owner and winemaker with his son Paul at Sobon Estate and Shenandoah Vineyards in Amador County, says that all his old Zinfandel plantings are on St. George rootstock. The Shenandoah Vineyards bottling is an "everyday, lighter, ready-to-drink style" from mixed vineyards. Wines under Sobon Estate are vineyard designated from different soils and exposures and produce different flavors and aromas.

The Sobon family owns 65 acres of Zinfandel in Amador County; they are all dry-farmed and mostly old vines. Fruit from some recent replantings goes into the Shenandoah label.

The Lubenko Vineyard in Fiddletown is about 80 years old. The parcel ripens late, about the third week of October, and yields two tons/acre (TPA) in drought years. Normal is three to 3.5 TPA, but Sobon notes that in dry years, the character is more intense.

Cougar Hill Vineyard, with 60-year-old vines, is at Sobon Estate in Shenandoah Valley. It yields three to four TPA. Sobon makes a distinction between Zinfandel from Fiddletown and Shenandoah Valley. Shenandoah Valley Zinfandel offers blackberry fruit and a dusty component that is distinctive. Fiddletown-area Zinfandel produces a complex wine with cherry components. It also has licorice, anise, and spicy notes.

"Traditional Bordeaux techniques don't work for us because tannins that we cannot tolerate remain," he states. "Fermentations are cool and short with pressing between 2° to 4° Brix followed by immediate transfer to barrel."

Mendocino speaks out

The Steele Wines Zinfandel tasted for this discussion was sourced from the 80-year-old DuPratt Vineyard in the mountains of southwestern Mendocino County. This 5.5-acre Zin vineyard is between the Anderson Valley and the Pacific Ocean at 1,200-ft elevation. High-toned fruit with good ripeness, but also very high acidity, ripens relatively late with picking usually occurring between October 10 and 20. The record TA was 1.9 g/100mLs (1.4g/100mLs was malic) in 1986, with sugars in the 24° to 26° Brix range. Average TA is between 0.85 and 0.95.

Given the relatively cool climate of the DuPratt Vineyard and late ripening, there is less raisining of the fruit at harvest compared with many other Mendocino Zin vineyards.

Zin vines at DuPratt are head-trained and spur-pruned, and receive no irrigation. Average rainfall is about 60 inches. With excellent vineyard management over the past 15 years, the vineyard, although old, is very healthy, yielding three to four TPA.

Steele looks for ripe, jammy flavors which normally become evident when the grapes reach 24° to 24.5° Brix to start harvest.

Importance of location and Petite Sirah

In the late 1980s, Dry Creek Vineyards kept one of its sourced Zinfandel valley floor parcels in the Russian River appellation separate and made a reserve wine from it. The wine's popularity and distinctive raspberry character supports continued bottling of this reserve. Fruit from all other contract-grower sources goes into a regular Zinfandel bottling as a blend.

Dry Creek's winemaker Larry Levin attributes grape and ultimately wine characteristics to location. The more distinctively flavored Zinfandels come from hillside vineyards with 80- to 100-year-old vines. This may seem a contradiction to the source of the Reserve, but "When you compare red clay hillside soil to valley floor, the theme running true between both is infertile soil and stressed vines," Levin contends. "There will be similar distinctive elements.

"Between the vineyard and winemaking, Petite Sirah offers structure and backbone. It is an essential element impacting the Dry Creek Vineyard style. In our opinion there's Petite Sirah, then there's great Petite Sirah. It's hard to find the great, rich sources where the juice is as viscous as wine extract, but we have some. A little of this goes a long way in a blend."

Due to their advanced age, most of Dry Creek's contracted vineyards have some Petite Sirah mixed in, to Levin's liking.

Keeping it light

Brutocao Vineyard in Mendocino County is a 1,300-acre parcel with 600 acres of vineyards and 30 acres of Zinfandel planted in gravely soil. Vines are about 30 years old and not very vigorous. Berry, raspberry, blackberry and sometimes strawberry aromas and flavors are noted in the wine. Because color is light, winemaker Nancy Walker has employed a number of methods to produce Zinfandel wine from this source over the years.

At first, Walker followed a Cabernet Sauvignon fermentation regime, trying to extract color and attempting to attain "the whole ball of wax" at once. It didn't happen. Over the past six years, she has tried some carbonic maceration and whole berry fermentation to showcase the very fruity characters of the grape. "This is where we've settled with style," Walker acknowledges.

Brutocao
CELLARS

1994 • Hopland Ranch
Mendocino

Irrigation and balance

Robert Mondavi Winery has contracted grapes from a drip-irrigated source, but Moore believes this wine is more suited to White Zinfandel, and it ends up in the Woodbridge program. On the other hand, he points to a Howell Mountain source that ripens late and needs supplemental irrigation. He cites another grower near Calistoga who has an infertile, drought-prone parcel. There, supplemental irrigation is also encouraged.

For the new Robert Mondavi ToKalon planting, principally head-pruned on St. George rootstock, irrigation is in place only to get vines up the stake. There are some plantings on "designer" rootstock for comparison.

Sobon tried 110R for new plantings and has gone back to St. George. While 110R is recommended for dry farming, Sobon found difficulty in getting it started while St. George starts easily. Yield is too high with 110R while St. George naturally limits production.

Winemakers report Zinfandel yields between 0.5 to four TPA. Levin says, "Coincidentally, each old vine vineyard has a home on the property and the winery doesn't own it."

Crop levels at 0.5 TPA are not economically feasible, but that's not the reason people keep harvesting these old vineyards. Most of them were planted by the grower's grandfather or father, and they are considered part of the family.

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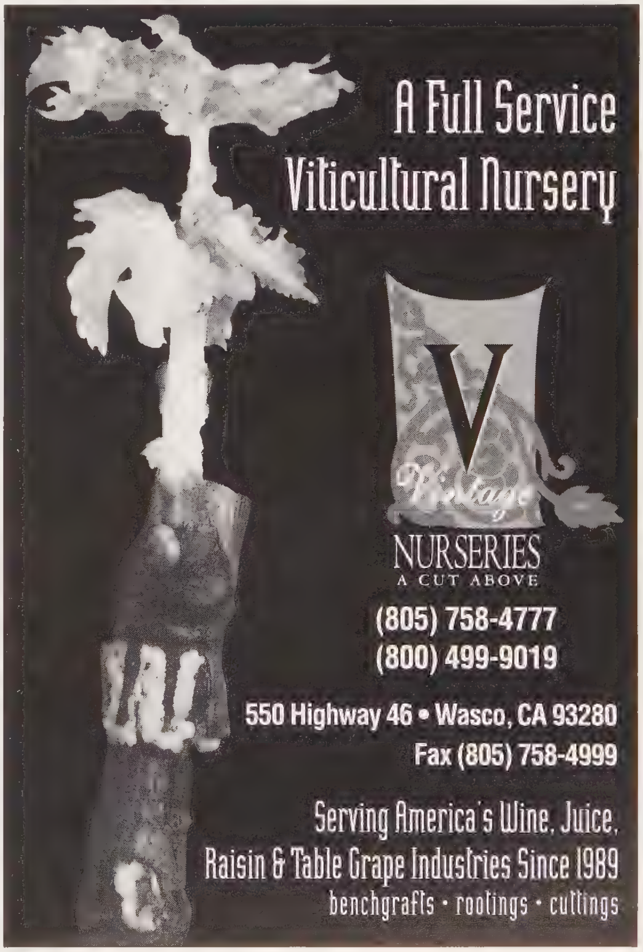
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"It would be like tearing up part of their soul," Sobon remarked. "They are going to farm it no matter what. And that's to our benefit."

Harvest maturity

Uneven ripening is a perennial problem with Zinfandel. Mackey notes that with 15% to 20% raisins per cluster, there are still pink berries. "More than any other variety, a winemaker needs to be familiar with the Zinfandel vineyard source. With two or three days miscall and a hot wind, sugars can jump 2° Brix easily. Particularly with old vines, you have to be dead on."

When Mackey gets lab readings of about 24° Brix from two five-gallon buckets of clusters, he knows that the next day sugars will be 26° Brix in the tank from the raisined berries.

Sobon says he picks all other varieties on flavor, but he can't do that with Zinfandel. He also bucket-samples not to get fooled and picks at 23.5° to 24.5° Brix.

Mackey believes that with Zinfandel, more than any other red wine, higher alcohol is an asset to overall flavors and balance. Zinfandel producers must simply be resigned to paying higher taxes due to higher alcohol.

Moore reveals that Tim Mondavi generally objects to high alcohol Zinfandels because he perceives them as too rustic and brutish. He's always looking for finesse and elegance. Since the Robert Mondavi Winery goal is no filtration on all reds, stability in the bottle is always a concern. Considering this, Mondavi is unwilling to have sugars go too high in an effort to avoid the heat from alcohol or residual sugar.

Franus senses that uneven ripening may be both clone and vineyard management related. Because Brandlin and Hendry vineyards are well managed, he sees less uneven ripening at these two sites than he witnesses at others.

Levin contends that sampling Zinfandel is a nightmare. If one watches only the sugar in the sample and omits consideration of raisin percentage, size of clusters, or weather conditions, Brix readings can be misleading.

"The only accurate sugar sample of Zinfandel is in the tank the day following crush," Levin maintains. "You can walk around the old-vine Zinfandel vineyards, and you can't find consistency vine to vine or block to block. From all this I've developed a rule — better too ripe than not ripe enough. A good vineyard at 22° Brix will make a good Zinfandel, but this same vineyard (ripe or over-ripe) can often make a great Zinfandel."

When the question of using a spinning cone to reduce alcohol was raised, Levin said he'd consider it only if the higher alcohol caused the wine to taste hot. "I believe that a wine that's perceived as hot is also a wine that's underflavored," he added. "If you have sufficient aromas and flavors, you don't sense heat."

Old vines

To begin preservation and propagation of heritage clonal material, Robert Mondavi Winery gained access to some dedicated clonal planting selections of Zinfandel via its vineyard sourcing.

"Five years ago that would have been unthinkable," Moore says. "We were so conservative on clonal selections because we worried about diseases and propagating unclean material. We're now ready to resign ourselves to finding the best clone and then thinking about the health of that clone."

Presently, Robert Mondavi Winery has two certified vineyards in Napa Valley with five-year clonal trials planted to certified clone Zinfandel and certified clone Primitivo.

"Relative to certified clone Zinfandel, everything about Primitivo is attractive both as a grape and as a wine," Moore adds. "What we don't have is old-clone Zinfandel to propagate for comparison against Primitivo. In our new estate vineyard, to spread our risk, we have one-third certified clone Primitivo and two-thirds old-clone Zinfandel field selections."

Franus remarks that with St. George rootstock many of the old clones don't exhibit virus, but on newer rootstocks, there's trouble.

When Sobon asked, "Has anyone

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here made a really good Zin from young vines?" nobody responded. He says he's made some good ones, but not good enough to vineyard-designate. He wonders why young vine Cabernet Sauvignon can be so good.

Levin believes that site is probably more important than the clonal selection for new Zinfandel plantings. Sobon adds crop levels to this. When he's made a good Zinfandel from young vines, yields were about 1.5 TPA. Young Zinfandel does tend to over produce.

Levin observes that a number of new plantings have been on trellis rather than head-trained. "When you stretch a vine on a wire, it's really easy to add too much crop," he cautions.

Two of the U.C. Davis Zinfandel clones are considered super clean, and Sobon observes that they typically over-produce. "There's the suspicion among many growers that virus may be necessary for what we call old-vine character."

Primary fermentation

Swain runs all fruit through a destemmer-crusher with rollers opened. Fermentation kicks in after a few days post inoculation with a cool fermentation yeast and completes in about six days. Pressing is done between 2° and 4° Brix. Only one of Round Hill's vineyard sources regularly receives post-fermentation maceration.

DRY CREEK VINEYARD

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Sobon suggests pulling the slides on the crusher to achieve complete destemming but leaving about 40% whole berries. He has fermented some lots in 4x4, half-ton bins. "It's labor intensive but definitely improves the wine because it slows fermentation," he notes. "You don't get a carbonic character because the whole berries actually start to ferment in three to four days. It also prevents the hot burst of fermentation temperature."

Walker follows the same method as Sobon in one-ton fermenters with 40% to 50% whole berries. Additionally, however, she does some true anaerobic, enzymatic carbonic maceration on about 30% of the lots that are not destemmed.

Levin questioned the effect of stems. "In the beginning, the wine has every conceivable stem flaw," Walker responds. "As it ages, these characters disappear and evolve into a peppery component."

In 1983, when Franus made wine at Mount Veeder Winery, he did a half-ton batch, whole cluster in tank. The wine was pressed about two weeks later and transferred to new François Frères barrels.

"It was one of the most interesting wines with incredible color that I've ever made — considering the winemaking technique," Franus says. "I've been vowing to do it again, and I will after listening to everyone's comments. I believe that with intense fruit such as that at Brandlin, a wine made in this fashion would have unique characters. With lightweight fruit, you aren't going to end up with much of anything."

At Robert Mondavi Winery, grapes are crushed by one of two methods. One yields a significant number of whole berries and the other thoroughly crushed fruit. One variant for larger-berry-clone Zinfandel with 50% whole clusters and uninoculated was tried. A 12-ton tank was filled in a fashion that layered whole berries with crushed fruit. It was late-ripened fruit with brown stems and took four weeks to ferment to dryness. The end result was a stand-alone wine that came across intensified.

Because it was so successful in a 1994 experiment, Sobon now barrels as much Zinfandel as possible immediately after pressing between 2° and 4° Brix. Walker follows a similar regime.

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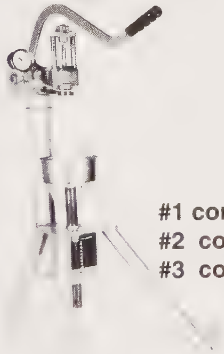

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Summarizing opinions of other winemakers, Levin maintains, "Every winemaker has nightmares about stuck fermentation. I've had a few red wines stick, but the worst has been Zinfandel. It's not just high alcohol. It may be low nutrient levels in old vineyards.

"In some vintages with certain vineyards, fermentation sticks and in other years it rolls along just fine. So, getting the job done is number one. I've used Prise de Mousse and now use Pasteur Red since the latter is touted for achieving better color. As long as either one goes dry, I'm happy."

Swain has found Pasteur Champagne yeast good with larger-berry clonal selections. This yeast puts the fruit on a middle-of-the-road track with less vegetal or undesirable character.

Jed Steele prefers Montrachet ADY, based on habit, as much as anything. Steele has used this yeast for over 15 years with Zinfandel and is satisfied with the results. In some years, when sugars over 26° to 27° Brix appear in the fermenter, Prise de Mousse ADY has been used. Inoculation is relatively small (½-lb per 1,000 gals).

1993 • DePratt Vineyard
Mendocino

Gentle pumpovers work best for managing the cap during Zinfandel fermentation in large tanks. In small containers, the only way is punch down.

Hastings observes that of all reds, Zinfandel is the most susceptible to losing fruit going from the fermenter, through pressing, to barrel. He's done side-by-side trials on running everything through the press versus draining juice out of the open-top fermenter, followed by five-gallon bucketing skins to the press, then keeping that fraction separate. He finds that wine quality is superior with taking only the skins and minimal wine to the press because there's less O_2 contact with the wine.

In reference to using press wine, Franus believes it's a fruit and site phenomenon. In his experience, Brandlin needs to be beaten up because it's big and tannic and needs more racking to help tannins evolve. With a more delicate style wine, he would not do this.

Levin agrees and considers discussion of berries, time of press, whether wine will be aerated or not, and post-fermentation maceration to be vineyard dependent.

Total skin contact for Jed Steele normally varies from 12 to 18 days, depending on rate and heat of fermentation. This is from the day of crushing until pressing. The wines are normally below 0° Brix and frequently dry.

Steele is not concerned with "taming" tannins in his Zinfandels. By

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using a tank press in place of harsher presses of the past, total phenolics from the same vineyards have decreased 20% to 25%. Steele wonders if recent phenolic levels in some of his Zinfandels are actually lower than he would prefer.

Barreling

Mackey wants malolactic fermentation (MLF) to complete in tank before going to barrel while Franus prefers finishing MLF in barrel. His leanings stem from Robert Mondavi input and the belief that wine getting an early first addition of SO_2 is served poorly. The integration of all elements — wine flavors and oak — are better when MLF finishes in barrel, yielding wine a notch up in quality. He suggests that this may be subjective, difficult to attach analytical data to, and related to experience only.

Moore views it as a way of not only delaying first addition of SO_2 but prolonging the fermentation. Therefore, at Robert Mondavi Winery, 100% post-alcoholic MLF is done in barrel. Inoculation for MLF is done after pressing.

Walker ages Zinfandel in seven- to eight-year-old French oak barrels. With the last two vintages, she has increased the percentage of new Demptos French oak while simultaneously adding some new American oak to the barrel mix. Newer French oak is adding complexity to the wine. Because the Zinfandel she produces is more delicate, she says it cannot take a lot of American oak.

Franus, Robert Mondavi Winery, Round Hill, and Steele all use French oak.

Initially, the Robert Mondavi concept, developed from a Cabernet Sauvignon mind set, called for a significant percentage of new oak. Moore says that it was too number driven, and the oak character was too strong. "We're committed to honor the house style, but all our reds must taste different," he contends.

Today, Robert Mondavi Zinfandel has less than 10% new French oak with a balance between five and six years old migrating from the Cabernet Sauvignon program.

"We believe a little new French oak can support the wine, but it has to be at the subliminal level," Moore adds. For new barrels, he favors Taransaud for its firm, assertive character without being raspy, green, or resinous. He tags it "straight ahead oak with a little bit of pepper and anise spice that's slightly undertoasted, by Robert Mondavi reference points."

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Moore and Franus also like Saury barrels for Zinfandel. Franus prefers them for consistency and complex flavor profile.

Traditionally, about 20% to 30% of Round Hill Zinfandel is aged in three-year-old French oak after use for Chardonnay. The balance is one to five-year-old American oak from a number of coopers including Seguin-Moreau and World Cooperage, chosen for their match to specific vineyards.

The barrel program at Dry Creek is heavy toast, toasted-head American oak, 20% new each year. For a reserve wine, new oak can be as much as 50%.

Since the 1993 vintage, St. Francis has used 100% new American oak, 80% from A&K and the balance from Seguin-Moreau and Demptos. "We have a bigger style Zinfandel and the flavors of American oak suit it," Mackey notes. "It's a personal taste avenue where the wine stays in barrel for about 14 months. Oak is not dominant, but it must be a noticeable component for our style."

Sobon uses Seguin Moreau American oak almost exclusively for Zinfandel. The single vineyard-designated wines all see brand new American oak for about six months of their ageing.

When Steele began to make Zinfandel in the early 1970s, it was customary to use American oak with this varietal. At that time, and to this day, Ridge Vineyards has set a standard for Zinfandel quality and used American oak exclusively.

However, Zinfandel was a minor portion of the red wine made by Steele at that time and French oak was used on all other red wines, so Steele chose to use it for Zinfandel as well. He has continued to use French oak nearly exclusively for all the Zinfandels he makes. Once a style is set and successful, he sees no reason to change. Using 20% to 30% new barrels has, at times, been an economic commitment, but with Zinfandel now flirting with $20/bottle price-tags, the cost for using French oak does not look so deep.

His experience over the years working for other wineries introduced him to the use of French oak for Zinfandel and he's stuck with it. Steele Zinfandel has between 20% and 25% new French oak. Throughout the industry, he attributes the progression toward French oak as a consequence of the popularity of Zinfandel.

To fine, filter or not?

At Robert Mondavi Winery, a goal is to not filter any red wine. Zinfandel is fined with egg whites in the barrel and racked twice after fining at the barrel stage and then while in tank prior to bottling. However, Moore says the movement away from fining is also a goal. "The aim is to blend for balance, but not have to fine to remove tannin," he explains. "But we would fine for clarity."

Swain's goal is to bottle unfiltered, dependent on the microbial status of the wine and the program level it goes to (*i.e.* less filtration occurs on Napa Reserve level wines).

"Year's ago, when we were doing hotter and longer fermentations, we had to fine," Sobon concludes. "Doing side-by-side trials with Amador Zinfandel, gelatin finings always turned out best. With cooler and shorter fermentations, we neither fine nor filter." ■

PWV *thanks Robert Mondavi Winery for hosting the discussion/tasting for this Zinfandel varietal review.*

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WINEMAKING

Effect of malolactic fermentation in barrels and tanks on red wine composition and quality

by Nicolas Vivas,[1]
Aline Lonvaud-Funel,[2] Yves Glories,[3]
Monique Augustin[2]

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Malolactic fermentation (MLF) is a typical microbiological stage in the process of red winemaking.[13] It occurs after alcoholic fermentation through the action of lactic acid bacteria and is generally brought about by *Leuconostoc oenos*.[9]

A study of winemaking in tanks and barrels has enabled us to show that the nature of the container in which MLF occurs leads to significant modifications of the phenolic composition of wines and changes their sensory characters.

In various wine-tasting sessions, tasters were generally able to identify the wines in which MLF had occurred in barrels. This result demonstrates the part which oak wood and its soluble components play in the progress of MLF and the influence which lactic acid bacteria have on the phenolic compounds of wines. It was possible to show improvement in the viability and malolactic activity of bacterial populations in the presence of gallic acid and free anthocyanins as well as an inhibiting effect of procyanidin seeds and oak ellagitannins.

Introduction

During MLF, malic acid is decarboxylated into lactic acid through the action of the malolactic enzyme.[8] Citric acid is also degraded, producing acetic acid and acetoinic compounds.[3,11] As a result, there is essentially a decrease in titratable acidity — due to the transformation of a dicarboxylic to a monocarboxylic acid — and a slight increase in volatile acidity.

All these transformations succeed in bringing about a softening of the wine, lessening the acidic and green character of the malic acid through a decrease in acidity and the release of polysaccharides (glycoproteins).[1] We also observe a significant modification of the aromatic[2,21] and taste[1] characteristics of the wines. MLF thus leads to modifications in the composition and quality of red wines.

Today, winemakers conduct MLF either in tanks or barrels. Origins of both techniques are closely linked to the understanding of MLF and its assimilation in everyday winemaking practices. Before the 1960s, MLF activity was unnoticed and unidentified. It usually started in the spring because the cellar became warmer, and the wine was said to be "working." Also during this period, Louis Pasteur's conclusions following his studies on wine[10] — that yeasts make the wine and bacteria degrade it — caused a long-lasting slowdown in scientific progress in this area.[14]

After the 1960s, work performed by the Agronomic and Œnologic Station of Bordeaux (Station Agronomique et Œnologique de Bordeaux) showed MLF to be a spontaneous phenomenon which is essential in the production of red wine intended for cellaring and should be triggered as soon as possible once alcoholic fermentation is completed.[7,14,12]

During the same period, concrete and steel tanks were being developed, followed later by stainless steel and plastic tanks. Simultaneous conditions became widespread through the advent of wine microbiology and the mastering of sulfiting.[14] Thus the stages in the fermentation processes involved in the ageing of red wines were separated.

In the Bordeaux region, MLF occurs most often in large tanks. The wine is only put into barrels when the fermentation process is complete and the content of free SO_2 has been adjusted. Meanwhile, in other French wine-producing regions, such as Burgundy, MLF occurs in barrels.

In Burgundy, the small size of the vineyards, and consequently the low volume of wine produced, has allowed this tradition to be kept while rigorously monitoring each barrel during MLF.

An organoleptic comparison of red wines in which MLF occurred in barrels and red wines in which MLF occurred in tanks often reveals the wines produced with barrel fermentation to be rated higher than those fermented in tanks.[19] This fact, which is confirmed two or three years after bottling, has aroused more interest in carrying out MLF in barrel, and is becoming an increasingly common practice in production of various red wines from the Bordeaux region.

Other wine-producing countries who would like to use this technique for their high quality wines include the United States (California, Oregon), Chile, South Africa (Cape Town), and Spain (Rioja, Ribero del Douero).

In general, results of organoleptic comparison show that, if MLF has occurred in barrels, the wine seems softer, richer and fuller; its aromatic characteristics have changed; it is totally restructured and seems better adapted to subsequent ageing in barrels. This wine develops more slowly, becoming structured and rounded, and the perception of drying astringency noticeable during the first months in barrels is considerably diminished.

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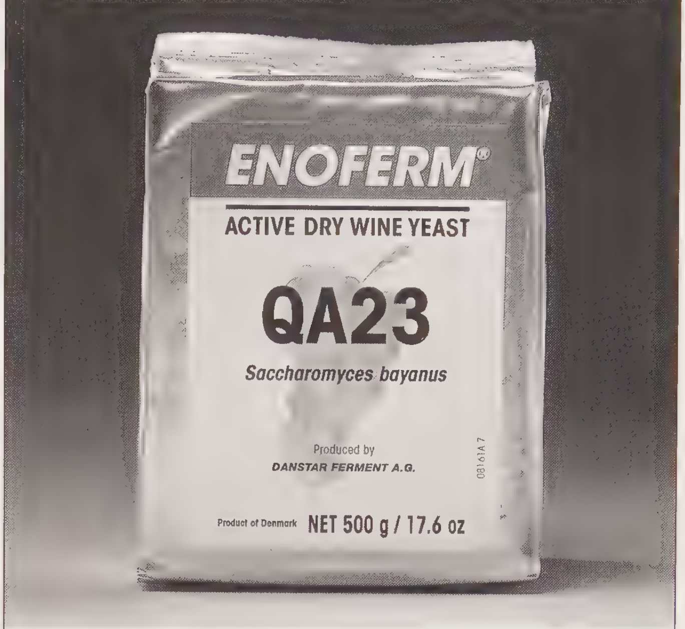

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that bacteria not only play a role as a natural deacidifier, but also affect the elements responsible for the taste properties of wines, namely phenolic compounds.

The first studies done on the relation between lactic acid bacteria, yeasts, and phenolic compounds in wine were undertaken by R. Saraiva (1983). It was reported that phenolic compounds such as phenolic acids and procyanidins inhibit the development of bacteria, whereas anthocyanins, such as malvidine, seem to be stimulatory. A negative relationship was discovered between the number of viable cells in a population of lactic acid bacteria and the concentration of phenolic compounds.[4]

M. Augustin studied the influence of MLF on the phenolic compounds of red wines and showed, in particular, that MLF generally increases the anthocyanin and tannin condensation, resulting in reduced astringency, and noticeably modified the color.[1]

There has been little research concerning the interaction between wine phenolic compounds and lactic acid bacteria. Only our recent work (Nicolas Vivas et al., 1995) has given new light on the subject.[20] This work endeavored to study the influence of a storage container (wood or stainless steel) on the progress of MLF. It also examined wine composition as well as the influence that phenolic compounds and oak may have on the viability of the lactic acid bacteria.

Results

Growth of lactic acid bacteria in tanks and in barrels: Influence on the composition and taste quality of red wines.

Effect of the container on growth of lactic acid bacteria

We followed the viable population of lactic acid bacteria in a Cabernet Sauvignon wine which had completed alcoholic fermentation in tanks and new barrels. The results are shown in fig. 1. It is interesting to note that the average initial bacteria populations were almost identical for the two MLF treatments.

In tanks, the exponential growth phase of the lactic acid bacteria was earlier and more rapid than in barrels. Also, the maximum population was higher in tanks than in barrels.

Viability of the bacterial populations in tanks decreased rapidly after the malic acid was depleted. In contrast, in barrels, the bacteria remained viable longer, but MLF completion was also delayed. These results are significant, even if there are sometimes large variations from the average.

Tests, performed in 3hL stainless steel tanks comparable in capacity to the barrels, showed that the observed differences, and in particular the prolonged stationary stage in barrels, were not solely due to variations in volume. These observations suggest the intervention of oak compounds which are soluble in wine. However, one should also bear in mind that thermal inertia in small volumes is not as good, and therefore may be affecting this outcome, because small containers do not retain heat as well as larger containers.

Influence of MLF on wine composition

Table I shows the general features in modification of the composition of a wine following MLF whether in tanks or barrels. There is a decrease in titratable acidity, an increase in pH, the complete disappearance of malic acid, coupled with a slight decrease in residual sugars (used as source of energy), and finally an increase in volatile acidity, probably brought about by the degradation of part of the citric acid. The differences in these components between tanks and barrels are not significant.

Effect of MLF on wine color and phenolic compounds

Table II details the chromatic characteristics of wines before and after MLF in tanks and barrels. The control sample (before MLF) was drawn and analyzed on the run off. The high oxygenation of the wine while it is processed

Fig. 1 - Effect of container on the growth cycle of lactic acid bacteria (average for MLF in various red wines)

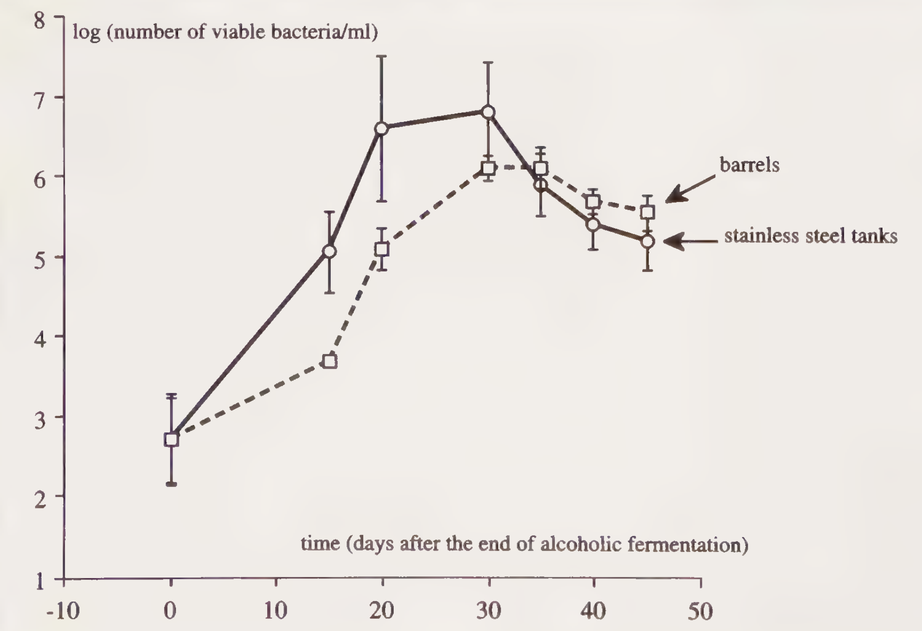

Table I – Effect of MLF in tanks and barrels on wine composition

	Before MLF	After MLF	
	Tanks	Tanks	Barrels
Alcohol (% vol.)	12.4	12.55	12.55
pH	3.65	3.98	3.95
Reducing sugars (g/l)	1.6	1.3	1.4
Total acidity*	3.95	2.87	2.85
Volatile acidity*	0.19	0.32	0.36
Malic acid (g/l)	2.2	0	0

*in g H_2SO_4/l

Table II
Effect of MLF in tanks and barrels on chromatic characteristics of the wines

	Before MLF	After MLF	
	Tanks	Tanks	Barrels
Color			
CI (1)	1.48	1.37	1.44
Tint (2)	0.51	0.56	0.53
d420% (3)	30	34	32
d520% (4)	60	56	55
d620% (5)	10	11	13
Origin of red color			
OD520	0.89	0.77	0.79
dA1% (6)	40	25	16
dTA% (7)	33	44	50
dTAT %(8)	27	31	34

1: OD420+0D520+0D620 **2**: OD420/OD520 **3**: % of yellow **4**: % of red **5**: % of blue in the CI′ **6**: contribution of the free anthocyanins to the OD520 **7**: contribution of the tannin-anthocyanin combinations decolorized by SO_2 *a′* la OD520 **8**: contribution of the tannin-anthocyanin combinations not decolorized by SO_2 to the OD520.

explains why the color intensity (CI) is greater than for wines which have undergone MLF.

MLF in barrels leads to a higher CI compared to that in tanks (1.37 tanks vs. 1.44 barrels), which is characterized by a greater portion of blue (11% tanks vs. 13% barrels). An analysis of the origin of the red color (Table II) shows that MLF significantly diminishes the initial portion of the free anthocyanins to the OD 520 (40% before MLF compared to 25% in tanks and 16% in barrels after MLF).

The spectrophotometric method was used for color anaylsis.

With MLF in tanks (Table III), the total phenols (d280) content decreases as a result of the quantity of the tannins (procyanidins) and anthocyanins. One equally observes a decrease in the astringency of the tannins (decrease of gelatin index) and a very distinct increase in the tannin-anthocyanin combinations (a rating of PVPP). These results suggest that, at the time of MLF, one part of the phenolic compounds precipitate or are degraded (decrease of the d280 and of the anthocyanins) and the other part undergoes a structural modification.

Furthermore, MLF in barrels is accompanied by specific changes (Table III); the barrel transfers to the wine the constituents which bring about an increase of the d280 and the extraction of soluble ellagitannins.

The structure of the tannins and their condition in the wine are more distinctly modified in barrels than in tanks. This can be explained by an increase in the degree of tannin condensation (rating of MCI), an increase in the tannins' colloidal state (rating of dialysis), and a larger decrease than in tanks of their reactivity toward proteins (measured index of gelatin). Finally, we notice a greater stabilization of the color compounds in barrels than in tanks, due to the combination of anthocyanins and tannins.

Table III
Effect of MLF in tanks and barrels on phenolic compounds of the wines.

	Before MLF	After MLF	
	(Tanks)	Tanks	Barrels
Proportion of phenolic compounds			
Total phenols (d280)	54	51	55
Procyanidins (g/l)	2.4	2.1	2.3
Ellagitannins (mg/l)	—	—	89
Anthocyanins (mg/l)	874	786	772
Structure of tannins			
Gelatin index (1) (%)	54	50	43
HCl index (2)(%)	14	17	23
Dialysis index (3)(%)	15	13	19
State of the color compounds			
PVPP index (4) (%)	46	52	56

1: astringent tannins 2: degree of tannin condensation 3: colloidal state 4: tannin-anthocyanin combinations

Table IV — Effect of MLF in tanks and barrels on the content of neutral polysaccharides (NP) and acidic polysaccharides (AP) of the wines.

(results in mg/L eq. glucose for NP and mg/L eq. galacturonic acid for AP)

	Containers for MLF	
	Tanks	Barrels
Free NP	435	505
Combined NP	203	392
Total NP (TNP)	638	897
% Combined NP	32	47
Free AP	72	68
Combined AP	240	227
Total AP (TAP)	312	295
% Combined AP	77	77
TNP/TAP	2	3

Effect of MLF in tanks and barrels on polysaccharide content in wine

Compared to MLF in tanks, MLF in barrels causes an increase in the content of combined neutral polysaccharides (Table IV). Other research has led to the discovery that oak wood polysaccharides which are soluble in an aqueous or alcohol-water (10% to 15% vol. ethanol) medium are neutral polysaccharides in a combined form (free NP: 20%; combined NP: 80%).

Under the same conditions of extraction, the yeast and bacterial polysaccharides are in a free form.[20] These results suggest a contribution from the oak wood to the wine during MLF and more generally during ageing. The contribution of free neutral polysaccharides by the lees seems more limited.

The acidic polysaccharides, coming from the grape, decrease slightly (Table IV); they are largely in a combined form (combined AP: 80%). In the case of MLF in barrels, a part of the combined acidic polysaccharides is precipitated.

Thus, in barrels, MLF leads to an increase in the combined neutral polysaccharides (originating from the oak) and free neutral polysaccharides (originating from the oak and bacteria and yeast lees). It also leads to a smaller decrease in the combined acidic polysaccharides (eliminated by precipitation); under these conditions, the contribution of TNP/TAP goes from 2.0 in the tank to 3.0 in the barrel.

Effect of MLF in tanks and barrels on wine quality

In the majority of tests performed to date, the wines coming from barrels in which MLF had occurred were preferred to those coming from tanks. The wines in which MLF occurred in tank were barrel-aged after MLF and before the evaluation. These preferences remained identical after the wine had been kept in bottles for one, two, and three years; the organoleptic differences brought about by MLF in barrels are thus stable and long lasting.

Tasters frequently gave the same comments about wines which had undergone MLF in barrels: the wine sometimes had more color, was often darker; the tannins were softer and rounder; the wine appeared richer and fuller; the woodiness and the fruity aromas were balanced; and the bouquet was harmonious. The differences in tasting results were significant, $P<0.05$ (95%).

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Effects of different phenolic compounds on viability of Leuconostoc oenos 8413

For this aspect of the study, the bacteria were collected in the stationary stage by way of centrifugation and incubated for 48 hours in non-proliferating conditions in the presence of different phenolic compounds, such as d280 = 50. This represents the content of total phenols of a red wine. Fig. 2 reports the development of the populations in the different environments after 48 hours of incubation.

Analysis of these results (fig. 2) clearly shows the positive effect on the viability of lactic acid bacteria by gallic acid and the anthocyanins (which in itself seems to assure growth). However, the ellagitannins of the oak and especially the procyanidins from the seeds of the grapes turn out to have a negative effect on the viability of the bacteria. The vanillic acids and *p*-hydroxybenzoic acid only have a slight effect on the viability. Several tests reproduced under the same conditions have shown identical results.

The increase in viability in the presence of certain phenolic compounds (free anthocyanins and gallic acid) suggests the intervention of the exocellular enzymatic activities of the bacteria. Furthermore, the study on the API™ gallery shows the strong activity of α-galactosidase, β-glucosidase, and *L. oenos* 8413 is aesculine-positive. The lowering of viability, observed in certain cases, can be interpreted as resulting from simultaneous inhibiting mechanisms associated either with absorption of phenolic compounds on the bacterial cell wall or with their penetration to the cytoplasm.

Discussion and conclusion

Malolactic fermentation is generally performed in stainless steel or concrete tanks. In the last several years, in the Bordelais and in a number of vineyards outside Europe, MLF in barrels has been rediscovered. It was only subject

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Research material and methods

I — Material

1. Experiments in wineries

The MLF trials were performed in 50- and 100hL stainless steel tanks and new barrels (Bordelaise barrels 225L, Allier oak, 24 months air dried, medium toast, Demptos) in vineyards of the Medoc (Cabernet Sauvignon, Merlot) and Saint-Emilion (Merlot) regions. Barrels were placed in the same location as the tanks, and the temperature was maintained above 19°C until MLF completion by indigenous bacterial populations. Analyses were done two weeks after MLF had been completed.

2. Laboratory experiments

Interaction studies were performed in a laboratory under controlled conditions on *Leuconostoc oenos* n° IOEB8413.

3. Origin of vegetal phenolic extracts

Skin extracts came from Cabernet Sauvignon fresh skins macerated in a water/alcohol solution. Lipids from the extract were eliminated by hexane extraction. The fraction containing the free anthocyanins was purified using a PVPP column under the conditions described by Y. Glories.[5] The extract was used in a freeze-dried form.

The grape seed extract was obtained under the same conditions as for the skin extract. Meanwhile, when the PVPP column was not used, the procyanidin portion was isolated by ethyl acetate extraction.[5]

The oak wood extracts were obtained under the conditions described by N. Vivas et al.[17]

4. Origin of the pure phenolic compounds

The different phenolic acids used were provided by Sigma.™

II — Environment and culture conditions

1. The environment used for the culture

Medium "A" was used for bacteria culture (casamino acid, 5 g; yeast extract 4 g; KH_2PO_4, 0.55 g; KCI, 0.425; $CaCI_2$, 0.125 g; $MnSO_4$, 0.025 g; $MgSO_4$, 0.125 g; glucose, 5 g; DL malic acid, 10 g; Tween 80, 1 mL; pH 4.5-4.8; H_2O quantity sufficient for 1,000 mL).

Medium "B" was used for the bacteria enumeration (yeast extract, 5 g; neopeptone, 5 g; DL malic acid, 10 g; $MgSO_4$ 0,05 g, $MnSO_4$; 0.02 g tomato juice, 250 mL; pH 4.5-4.8; H_2O quantity sufficient for 1,000 mL).

Medium "C" was used to study the survival of bacteria populations in the presence of different substrates (phosphate buffer, KH_2PO_4, 0.15 M; pH 4,5).

The media were sterilized for 15 minutes at 120°C.

2. Culture conditions

The cultures were grown in a dark medium at 25°C.

III — Methods

1. Enumeration of lactic acid bacteria

Bacteria are enumerated using nutritive agar: the nutritive medium composed of "B" is added in the same volume as the DIFCO agar-agar (20 g/L). The yeast growth is eliminated by the addition of pimaricine (0.2 ml of a 5 mg solution per 10 ml). The growth of the bacteria can be followed by measuring the optical density at 600 nm (1 unit of 0D = 1,3 x 10^9 bact./mL). The Petri dishes were incubated for five days at 25°C in anaerobe jars.

2. Non-proliferating cells preparation

The necessary biomass (of the order of 10^9 bact/mL) was achieved through centrifugation of the culture medium (10 min, 10,000 rpm, 4°C). It was washed with 10 ml of phosphate buffer and centrifuged once again.

The bacterial population was then put in a phosphate buffer solution supplemented with various phenolic substrates. The number of viable bacteria after one and two days of incubation at 25°C is estimated by enumeration in the agar-agar medium.

3. Quantitative determination of malic acid and glucose

The malic acid and the glucose were determined by enzymatic method (Boehringer, Mannheim).

4. Enzymatic activities of L. oenos

The total extracellular activities of *L. oenos* 8413 were revealed by APIZYM™ (ref. 2 520 0) using 65 *u*l of a suspension containing 5 x 10^9 bact./mL at 5.4 pH.

5. Quantitative determination of the phenolic compounds

Methods used were developed by Y. Glories.[5,6] The total phenolic compounds were estimated by measuring the OD 280 nm.[15]

6. Classical analysis of wines

The methods recommended by the O.I.V. were used (alcohol, titratable and volatile acidity, pH, reducing sugars).

7. Quantitative determination of the polysaccharides

The acidic and neutral polysaccharides were isolated and determined under the conditions proposed by N. Vivas and Y. Glories.[18]

to simple tests in the beginning, thereafter due to the highly satisfactory qualitative results, the MLF in barrelled wines rapidly developed.

Today, many wineries conduct MLF in barrels in volumes variable with their harvest. This wine is then blended with batches in which MLF has taken place in tanks for equilibrium of wine character. The organoleptic differences between these two techniques of MLF are very noticeable and often favor use of the barrel.

These results and the field observations undertaken at several wineries have led us to study in detail the influence of the nature of the container (stainless steel tank or barrel) on the composition and quality of the wines. The need for experience and a better knowledge of MLF in red wines necessitates a detailed study of the relationship between *L. oenos* and the phenolic compounds in wine and oak wood of barrels.

Compared to MLF in tanks, MLF in barrels results in appreciable color and phenolic modification in red wines. The color intensity essentially increases through increases in the proportions of the red and blue pigments; the wine thus appears darker.

The astringency of the tannins decreases in parallel with the increase in their degree of polymerization; also, color is stabilized in the form of tannin-anthocyanin complexes. All of these modifications have a significant impact on the sensory quality of the wines which have undergone MLF in barrels. These wines were preferred to those which have undergone MLF in tanks and then subsequently barrel-aged. The differences remain identical after the wine has been kept in bottles for three years. These results have therefore suggested that lactic acid bacteria play a role in modifying the phenolic compounds in the wine.

The bacterial metabolism in oak barrels is affected by the "small volume" effect, the porosity of the material, and the solubility of the constituents of the wood. Some weeks after MLF completion, one can measure the ellagitannins and combined neutral polysaccharides in the wine which come from the barrel staves. Thus, the growth cycle of *L. oenos* is noticeably modified.

The starting phase of exponential growth is delayed in comparison with MLF in tanks; the maximum population is lower, but on the other hand, the stationary phase is longer. Bacterial viability tests on the stationary phase have shown the positive effect of gallic acid and the free anthocyanins of grapes and the negative effect of procyanidins from the grape seeds and the ellagitannins from the oak wood. These results have suggested to us that there is an interaction between the phenolic constituents of oak and wines and the lactic acid bacteria responsible for MLF.

These laboratory and field observations have led us to study the interactions between a strain of *L. oenos* (8314) and phenolic compounds found in wines and in oak.

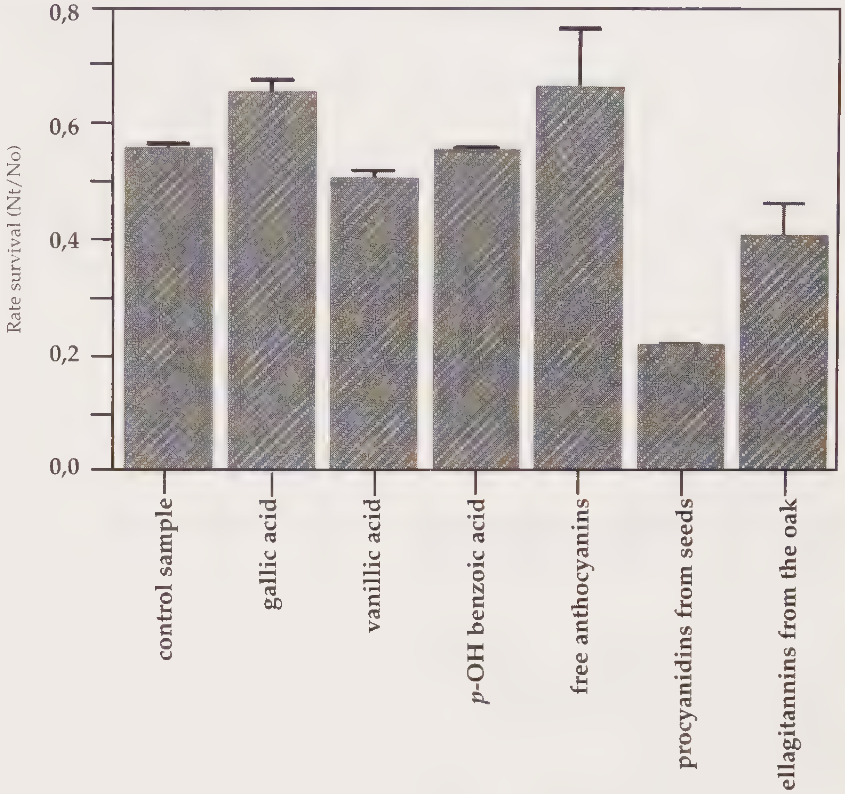
Gallic acid and free anthocyanins have desirable effects on the viability of *L. oenos*. On the other hand, procyanidins are strong inhibitors of bacterial viability. Finally, extracts from oak wood possess the same properties as procyanidins.

A more detailed study (results not published) on defined structures, such as castaligin, have revealed to us the possibility of hydrolyzing certain ellagitannins into simple and less inhibitory molecules. This route, definitely a second choice, could constitute a complementary way of detoxifying the environment.

Finally, in wines after barreling, lactic acid bacteria simultaneously find the elements which favor their growth and their malolactic activity and the families of compounds belonging to the tannins group which possess inhibiting effects. This could be assimilated as a balance which, with regard to the composition of the wine, favors either a premature and quick MLF or on the other hand a long and delayed MLF.

The most precise knowledge of the different activating or inhibiting molecules permits a better appreciation of the "malolactic fermentability" of wine in barrels. The qualitative advantage of the aforementioned justifies an increase in the biological study of lactic acid bacteria in this complex environment. ■

Fig. 2 – Effect of several phenol compounds on the survival of *L. cenos* in non-proliferous conditions (Nt: population after 48 hours of incubation- No : initial population)



Edited from "Journal of Cooperage Sciences & Techniques", *Vol. I, 1995, published by Vigne et Vin Publications Internationales and Demptos Cooperage.*

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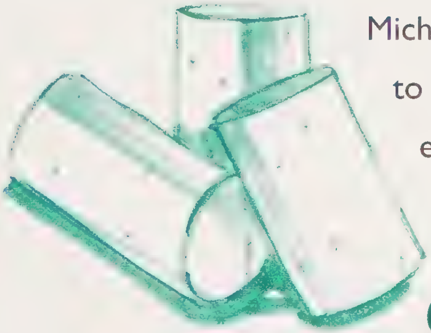

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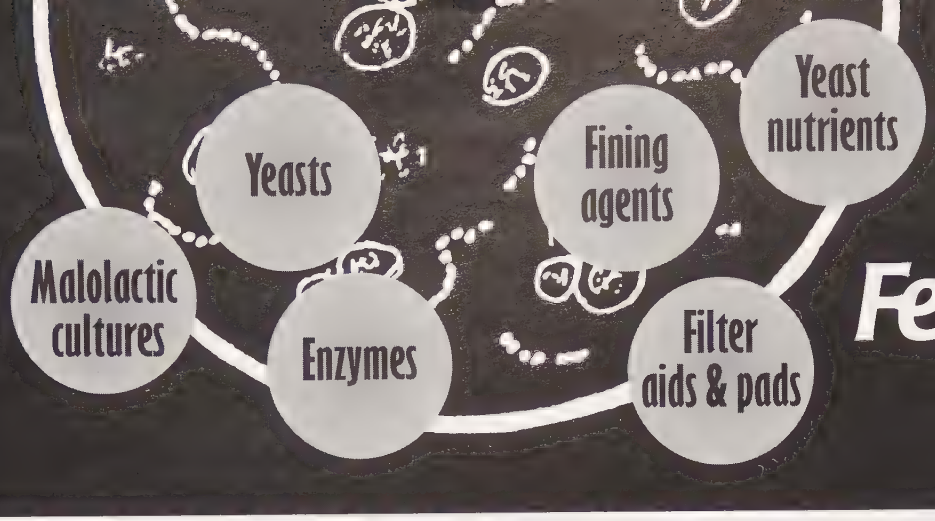

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Using advanced microbial and physiological techniques, MiTech has developed and refined a completely novel malolactic fermentation organism. The 44-40 bacterium combines the desirable metabolic and organoleptic characteristics of the slow-growing *Leuconostoc* species, with the robust growth and stress-tolerant characteristics of the *Pediococcus* species, without retaining any of the undesirable off-flavors or aromas often associated with *Pediococcus*.

During recent harvest seasons, these cultures have been used by small, medium, and large wineries in all major U.S. wine production regions, with a success rate of over 90%, even under conditions of low temperature and low pH.

The 44-40 Malolactic Culture is very easy to use. Each package of the culture is premeasured to provide sufficient active bacteria for the volume of wine to be fermented (1,000 gallons, 10,000 gallons, or 100,000 gallons). The winemaker simply selects the correct package, resuspends the culture following the directions, and pours the resuspended culture into the wine.

For wines that are especially resistant to induction of malolactic fermentation, a high-density inoculum, 54-40 is available which provides a minimum of 20 million cells per ml of inoculated wine.

For more information, contact:
Pickering Winery Supply
888 Post Street
San Francisco, CA 94109
tel: 415/474-1588; fax: 415/474-1617

Please see our ad, page 66.

Scott Laboratories, Inc.

After beginning in 1974 with only two yeast strains, Scott now offers a variety of yeasts produced by Lallemand.

Supplementing the well-accepted EC1118, 71B, and K1 (isolated from the Champagne, Beaujolais, and Midi regions, respectively), newly introduced strains have found growing appeal. These yeasts were selected to complement different winemaking styles. They include RC212 and CY3079 (Burgundy isolates for red and white wines, respectively), D254 (a Rhone region strain for lifting fruit character of reds), and BM45 (from Brunello). The BM45 has received excellent reviews, particularly for creating improved mouthfeel in a spectrum of reds.

In 1997, the Lalvin AC- (a Loire isolate) will be introduced. Properties include lower acidity perception while maintaining fruit and floral character in whites.

Scott offers five strains of malolactic cultures from Lalvin including the EQ54 for direct inoculation.

In 1996, the Laffort family of yeasts was introduced. These yeasts were selected by J. Laffort in Bordeaux and are produced by Lallemand. They include VL1 and VL3 for whites and F5 and F10 for reds. The VL3 is particularly notable for revealing varietal aromas from aroma precursors found within the grape. Also in 1997 Laffort ST (Sauternes) strain for residual sugar whites will be introduced.

Scott processing aids include gelatin and tannin products (produced by Laffort) and proprietary Scottzyme enzymes. These include PEC5L (a concentrated pectinase), HC (a pectinase-hemicellulase blend for hard-to-press varieties), Color PRO (for color stabilization and better settling), Color X (for color extraction), and KS (for difficult-to-filter wines).

For more information, contact:
Scott Laboratories, Inc.
220 Pine View Way, Petaluma, CA 94955
tel: 707/765-6666; fax: 707/765-6674

Please see our ad, page 46, 56.

Vinquiry

Vinquiry offers a comprehensive range of yeast, malolactic bacteria, and nutrients for the wine industry. Clients can select from over 30 yeast isolates to make suitable matches for fermentation, considering grape variety, nutrient status, wine style, desired aroma, and flavor profile. Experienced and knowledgeable staff can assist in evaluating parameters to make yeast selections and nutrient recommendations that will optimize fermentation conditions for wine quality and avoiding stuck fermentations.

Vinquiry is the exclusive U.S. distributor of the ENOFERM line of specialty yeast developed by Dr. Paul Monk and produced by Lallemand. Additional Lallemand strains of active dry yeast and a collection of yeast on slants are also available.

Several selections of malolactic bacteria including the MCW strain, isolated and developed by Vinquiry, are available.

Do you know when to best utilize direct addition cultures? The Vinquiry staff can assist in determining most suitable bacteria preparation for your use, whether direct addition type or precultured from freeze-dried or liquid cultures.

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For optimal red wine fermentations,

Lallzyme EX is now available to enhance color stability and mouthfeel by optimizing condensed tannin extraction during maceration. Vinquiry's focus, in both testing services and fermentation supply, is to provide clients with useable information to optimize winemaking and wine quality.

For more information, contact:
Vinquiry
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tel: 707/433-8869; fax: 707/433-2927

Please see our ad, page 49.

The Wine Lab

The Wine Lab offers a broad range of the yeasts, bacteria, enzymes, nutritional supplements necessary for wine fermentation. Yeasts include Red Star and Gist-Brocades dry yeasts, as well as liquid cultures of selected strains. Malolactic bacteria include Chr. Hansen *Viniflora oenos* direct-addition freeze-dried, as well as liquid ML cultures. Supplements include nutrients and vitamins for yeasts and ML bacteria, such as Superfood, Leucofood, Vitamix, Yeast Extract T154, Nutrex Yeast Hulls, Yeastex, and more. Enzymes include Biopectinase, Rapidase Ex-color, and AR2000.

In addition, The Wine Lab is renowned for solving wine problems and dealing with stuck yeast or ML fermentations. There is no one cause of stuck fermentations, nor is there one cure. Most problems occur because a series of negative factors added together compound each other, including vineyard influences, must composition, winemaking choices, and cellar practices. Understanding the interaction among these factors is the key to preventing or restarting stuck fermentations.

Many musts need supplementation, both with DAP and complex blends, but the right amounts for one are not right for all, just as a particular yeast strain may be perfect for one situation but not for another. ML inoculation adds yet another dimension, and bacteria-yeast interactions complicate the picture even further.

The Wine Lab's staff members understand that the intricate nature of fermentations means that each should be treated on an individual basis. Their extensive experience with nutrients and the needs of yeast and ML bacteria makes possible a comprehensive, personalized approach to every fermentation.

For more information, contact:
USA/Canada: The Wine Lab
477 Walnut St., Napa, CA 94559
tel: 707/224-7903; fax: 707/255-2019
e-mail: winelab@wine.com
New Zealand/Australia:
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THE BOSWELL COMPANY

by Dr. Richard Smart

Smart-Dyson looks sweet

Hafner Vineyard, Sonoma County, one of the smaller vineyards and wineries in California, has successfully adopted new trellising technology. Small in this case does seem beautiful, as this enterprise is leading the way for many larger North Coast vineyards in the "trellis revolution," which is now in the early stages.

First planted in 1969, Hafner Vineyard is on an attractive site nestled under the hills on the eastern side of Alexander Valley. Richard Hafner worked in Public Affairs at University of California, Berkeley, and developing the vineyard was a side business, almost a weekend retreat. The vineyard used the existing technology of the time: two-wire trellis and 12x8 ft. spacing.

Winemaker and vineyard overseer, Parke Hafner remembers weekends he spent as a child on the property. He graduated from UC Davis in Fermentation Science in 1979 and followed this with work experience in Napa Valley and Burgundy. The winery opened in 1982.

Vineyard evolution

The vineyards at Hafner were always quite vigorous, and over time the yields declined, as commonly happens when the vines become more vegetative. The pruning was changed from cane to cordon, but this had little effect on the vine vigor.

Hafner was aware of the need to promote vine balance, but was unsure of how to proceed. He wanted the cost savings from mechanical harvesting and also to benefit from mechanical prepruning in the future.

In 1992, Hafner attended one of my Sonoma County seminars and Rich Thomas (viticultural instructor from Santa Rosa Junior College) and I discuss benefits of canopy management. Hafner recognized that trellis retrofitting could offer the solution to the vigor and vine balance problem at Hafner Vineyard.

Why choose Smart-Dyson?

Of the trellis systems discussed, Hafner chose the Smart-Dyson for the existing vineyards and for new plantings. This system has been described in a previous column, Nov/Dec'94 **PWV**. The Smart-Dyson is a vertically divided canopy, like the Scott Henry, with shoots trained both upwards and downwards. There are two fruit zones, in the center of the vertical canopy which is about seven feet tall.

I now recommend the Scott Henry system for those who want to cane-prune, and the Smart-Dyson for those who want to spur-prune. With the Smart-Dyson, there are upward and downward facing spurs on both sides of the cordon. It is performing very well in vineyards in California, Australia, Argentina, and Chile.

When asked why he chose Smart-Dyson, Hafner said he wanted a vertically divided system, especially for the ease of mechanical harvesting. He wanted to be able to preprune by machine in the future, so spur pruning was essential, and the cane-pruned system was discarded.

Parke Hafner beside the Cabernet Sauvignon vineyard converted to Smart-Dyson.

Hafner reasoned also that the Smart-Dyson would reduce any possible discrepancy in fruit ripening between upper and lower canopies, the upper one being slightly more exposed. Since shoots from upper and lower canopies arise from the one cordon, the shoots in the upper canopy would also contribute to fruit ripening in the bottom canopy.

Hafner was not concerned about introducing a new, relatively untried system. He reasoned that fruit exposure and hence wine quality would have to be improved with the Smart-Dyson, because the underlying physiological principles were sound. And, if the unexpected did happen and some problems showed up, then the vines could be easily converted to Vertical Shoot Positioning (VSP) by removing downward facing spurs. What did he have to lose?

Let the conversions begin

The new vineyards of Chardonnay and Cabernet Sauvignon on 110R spaced 10x7, trained to the classic Smart-Dyson, show the most dramatic improvement. Hafner and vineyard manager Warren Carey have done a wonderful job of training these young vines. Their vineyard is one of the finest examples of the Smart-Dyson I have seen anywhere in the world.

"Timing is everything for shoot positioning," says Carey. "People who are concerned with downward shoot positioning need not be, provided their timing is correct. Our breakage is minimal with no impact on yield."

The first pass through the vineyard for shoot positioning should be within one or two weeks before bloom, when shoots are divided into upward and downward groups. The second pass should be three to four weeks later, after fruit set, to train the top shoots upward between foliage wires and to direct the bottom shoots downward with a foliage wire. Only one movable foliage wire is needed to hold the bottom shoots downwards.

During the third pass — about two or three weeks later still — the top shoots get a final tucking in between the wires. The total labor requirement for shoot positioning, including all three passes, should be less than 15 man hours per acre. Some devigoration of downwards shoots was noticed, as is expected. Topping was first done when about 30% of the shoots were about 30cm above the top wire (76 inches above ground), followed by a second topping two weeks later.

Vine and wine responses

Hafner cannot be sure exactly how the old and new trellising compare, as he has made a 100% conversion and not left any control. However, he feels confident that yields are well above average, especially for Cabernet Sauvignon, which produced 6.4 tons per acre in the fourth year (1996). The ten-year average for this variety was 3.4 tons per acre on a two-wire trellis. Similarly, the average yield for Chardonnay was 4.3 tons per acre, which the young Smart-Dyson vines exceeded in their second harvest in 1996 (4.6 tons per acre).

Both Cabernet Sauvignon and Chardonnay vineyards are young and spur positions are still being created, so the final yield potential is not

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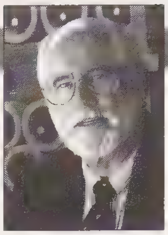

by D.R. Storm, PhD. P.E.

"AN ECO-FRIENDLY, RAT TERMINATOR THAT WORKS!

If your winery is in some part of the world where the ubiquitous ***Rattus rattus*** *does not prevail, you are very fortunate. Rats and other rodents do have their role in the ecological order on planet earth, and there have been literally millions of rats and mice sacrificed in laboratory experiments for advancements in medicine and understanding disease, as well as developing human-safe pharmaceuticals.*

Nonetheless, rats are efficient carriers of human pathogens, and their feces and urine can contain disease vectors for plague (black death), Weils disease (Leptospirosis), bacterial food infection (Salmonellosis), and Trichinosis (Enteric parasite).

I have had encounters with cat-sized Siamese brown rats that inhabited a U.S. Navy ship that I called home for two years. They were anything but shipboard pets. Tree rats or roof rats, biological name Rattus rattus, *are both urban and rural dwellers, as well as versatile omnivores. They are able to survive and reproduce well on acorns, nuts, field corn, grapes, and other orchard crops. I have destroyed nests that contained large numbers of snail shells, suggesting that tasty escargot might also be a part of their diet.*

While growers can usually tolerate a 3% to 4% grape loss to birds, they might be less inclined to tolerate grape predation by rats. Rat traps and other mechanical devices are useless in vineyard situations because birds and small benevolent mammals are also trapped, as are the standard urban rat bait/poison alternatives, as birds unwittingly become the poison targets, with "warfarin," an effective blood thinner, the lethal agent.

If on the other hand, as my limited field experiments have shown, refined wheat flour mixed dry, equally with plaster-of-paris, produces a bird-proof mix that nuisance rodents cannot seem to resist. Small, aluminum pie pans serve well as containers with a one-half kilogram rock for ballast. The rodents expire from acute indigestion, which seems slightly more humane than hemorrhaging to death from the warfarin-laced commercial rat poison.

Before trying the plaster-flour scheme for rodent control, question your local farm advisor and/or pesticide control agent to make sure that he/she feels comfortable with the rat-target-specific nature of the bait. Often the winery's landscape is shared by range-free ducks, geese, guinea hens, and tree squirrels, which also might find the plaster-flour to their liking.

Safe Drinking Water Act amendments of 1996;

Groundwater disinfection may be required soon

PART I

Overview and definitions

Sanitary microbiologists and public health practitioners worldwide have historically felt safe in allowing the use of well water (that is groundwater that occurs, all inclusively, as springs, drilled wells with pumps, and artesian or free-flowing wells) for culinary purposes (drinking, cooking, and general sanitation).

Groundwater contamination incidents in the last decade, however, have altered that basic water-supply philosophy. While the current proposed Safe Drinking Water Act (SDWA) amendment focus is on ***public*** water supply systems, small privately owned systems such as those found in rurally located wineries, will probably come under scrutiny. Those wineries which offer tours and tastings to the general public will be the particular targets. To ensure that water system classifications are unambiguous, the U.S. Environmental Protection Agency (USEPA) has published the following definitions:[1]

Public Water System — A system that has 15 or more service connections or that regularly serves at least 25 people per day for at least 60 days each year.

Community Water System — A public water system that has at least 15 service connections for year-round residents or that serves at least 25 year-round residents.

Transient Noncommunity Water System — This system does not meet the definition of a public water system and may typically serve travelers and others, who are "passing through" or staying temporarily at locations, such as highway rest stops, restaurants, and public parks. These systems serve at least 25 people per day for at least 60 days per year (the people served daily are not necessarily the same people each day).

Nontransient-Noncommunity System — Nontransient noncommunity water systems serving the same 25 or more people for at least six months per year. This category might include schools or businesses that have their own drinking water supply.

Wineries with tours and tastings could, without question, be included in the Transient Noncommunity Water System classification.

Why disinfect groundwater?

The classic test for microbiological safety of drinking water has been based on the absence (or very low titer) of the group of so-called coliform organisms that inhabit the intestines of warm blooded animals, including, of course, *Homo sapiens*.

Testing for the presence of coliform organisms requires sampling of the water supply and then analysis by a certified microbiological laboratory. This testing might take from two to seven days depending on whether a "confirmed" result is required. This after-the-fact method of monitoring does not provide much of a safety net for the users of the water, who might be drinking contaminated water for several days to a week before the health threat is verified.

It has been reported that as many as several million illnesses annually may be attributed to contaminated small-scale, non-public water supply systems.[2] Regulatory requirements, such as disinfection of the water supply prior to use, are not specifically part of the 1996 SDWA amendment package, but EPA will continue to study the small system problem with a target date for issuance in 1998.[2]

What form might the groundwater disinfection rule (GWDR) take?

Bruce Macler cites that, in practice, small systems might receive a periodic survey of their wells, distribution, operation and maintenance (O&M), and water quality monitoring programs.[2] If contamination was discovered from samples taken at the time of the sanitary survey, then the installation of a disinfection unit would be mandated.

The EPA is also seriously considering a requirement that a disinfectant residual be maintained in the water supply distribution system to prevent recontamination while the water is conveyed to its place of use. This would preclude the use of ozone as a disinfectant which has a transitory existence and can provide no "after application" protection.[3]

Finally, if the sanitary status survey suggests that the groundwater supply is highly vulnerable (shallow wells, presence of a major source of fecal contamination in the tributary watershed, etc.), extra-precautionary monitoring would be imposed on the source. ■

David Storm is a consulting civil and sanitary engineer specializing in winery utilities, owner of Winters Winery, and the author of Winery Utilities: Planning, Design and Operation.

References

1. *On Tap, Drinking Water News for America's Small Communities.* Vol. 5, No. 4, p. 10, Winter 1996 Issue.
2. Macler, Bruce, "Groundwater Disinfection Rule: What's the Story?," *On Tap, Drinking Water News for Small Communities*, Vol. 5, No. 5, pp. 21-22.
3. Storm, D.R., 1996. *Winery Utilities: Planning, Design and Operation*, Chapman & Hall, New York, NY, pp. 165-167.

For further in-depth reference material on the subject contact:

a) Safe Drinking Water Act Amendments of 1996, USEPA; General Guide and Summary to Provisions. 1-800-426-4791 (Request EPA No. 810/5-96/001)

OR

b) Online at http://www.epa.gov/OW/OGWDW/SDWA summ.html.

c) Full-text version of 1996 SWDA Amendments. AWWA World Wide Web page @ http://www.awwa.org/govtaff/govaff.html.

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Continued from page 81

yet known, but will surely be higher than the 1996 figures.

It is also too early for critical data from wine comparisons, but Hafner can say that all indications to date are that the wine quality is the same or better than before. Cabernet Sauvignon wines appear to have more color and flavor than under the old system. The Chardonnay on Smart-Dyson ripens earlier than with the two-wire vertical, which is an indication of improved quality. During the hot summer of 1996, there were some effects noted of over exposure of fruit, but any effects on yield and quality seemed minimal.

The future

The first conversions and plantings at Hafner were of 10 acres, and now another 40 acres of Smart-Dyson have been added. Eventually the property will go to 100% Smart-Dyson as AXR-1 grafted vines are replaced.

So far, the young vines have been hand-picked, but Hafner plans to mechanically harvest the majority in 1997. The system picks exceptionally well in Australia with the bow rod configuration. In fact, you have to look closely to see if the harvester has been through the vineyard.

Hafner has been able to eliminate leaf pulling totally, and this labor cost — necessary before the conversion — was more than he has had to pay for shoot positioning. Once spur positions are set, mechanical pre-pruning will be done.

One interesting benefit of the Smart-Dyson has been in dealing with soil variation in the block. There are several gravel lenses in the property, and vine vigor is lower for a few vines along the row. Where this is the case, the vines are trained to VSP only, as this is suitable for low-vigor vines.

Congratulations to Parke Hafner and Warren Carey on their achievements. They report that their neighbors are watching the vineyard carefully. I can think of many other California vineyards which would do well to emulate the canopy management at Hafner Vineyard. ■

Dr. Richard Smart, "the flying vine-doctor" is an international viticultural consultant, contactable in Australia by fax on 0011 61 65 84 0121, or by e-mail on smartvit@midcoast.com.au. He visits America frequently and can be contacted at Vinquiry in Healdsburg, CA on phone 707/433-8875.

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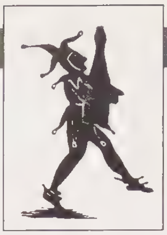
by Jake Lorenzo



The ball and all

Every now and then, I'm happy just to be alive, to survive a terrifying ordeal, and wake up the morning after with all my body parts functioning. Earlier this year, Jake Lorenzo set the land endurance record for partying: 24 consecutive days in New Orleans, starting with Superbowl, moving through Mardi Gras, and finishing with Lance Cutler's 50th birthday celebration. It was a grueling, yet ecstatic adventure.

Superbowl turned out to be more fun than I had anticipated. Jake was hired to protect a Cajun millionaire who manufactures Louisiana's ubiquitous daiquiri machines; the job consisted mainly of weaving our way through mobs of drunken revelers, all of whom wore giant foam cheese wedges on their heads. We watched the game from a private box, where two bartenders kept our glasses filled, and we helped ourselves to delicious, hot Cajun food like crawfish etouffee and red beans and rice.

After the game, we pushed our way through the thick cigar smoke blanketing the city from all the puffing yuppie cheeseheads and headed to the River Shack. Reddy Teddy was doing a blues revue. My favorite part was when the piano player passed out into the piano and later woke up with stripes on his face from the piano wires.

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A Tuscan dinner, created by visiting chef Luciano Ghinassi of Ristorante Buca Lapi of Florence, Italy will be hosted by Atlas Peak Vineyards.

New Orleans after Superbowl was delightful. The locals got on with the business of Mardi Gras. Two or three parades a night kept parade goers happy chasing beads, go-cups, and the occasional doubloon. The restaurants were busy, but not packed. We spent our days having quiet lunches at neighborhood restaurants like Clancy's and Kelsey's and Pascal's Manale. We went fishing a couple of times, and had a great time in spite of no fish. I still like drinking on boats. Evenings we'd have quiet dinners at home with Jerry and Catherine Henry and the Cutlers, then we'd go out to catch local musicians.

The next week, we got serious about eating. We had wonderful sushi at Kyoto one night after sampling the tequilas in Vacqueros. The next night, we found our way to Martinique for a late night French feast. Wednesday was a winemaker dinner with Lance at Ruth's Chris Steakhouse. Lance's act has evolved into a good hour of stand-up comedy. I had to Heimlech one lady who almost choked on her steak while laughing at a story about his grandmother. The Ruth's Chris people comped us drinks in gratitude.

Thursday, we had a four-hour lunch at Galatoire's with Rusty Staub. As we left, we bought drinks for all the people who were sitting in line in lawn chairs to guarantee that they got tables for the next day. (Friday lunch at Galatoire's before Mardi Gras is the most prized local possession this side of a Zulu coconut.)

Friday night, we deftly avoided both the Metairie and Mandeville parades to dine at Dakota's where owner Kenny LaCouer insisted on buying us a procession of after dinner drinks, until we had to go into the kitchen to make breakfast before heading home.

For Mardi Gras weekend, we got the hell out of Dodge. You see, New Orleans is divided into two groups. One group goes nuts for Mardi Gras. They join the crewes, participate in the parades, and attend everyone else's parade. They fight the crowds, bring their ladders, eat their sandwiches, and rate the parades by how good the throws are. (Throws being the generic term for all the stuff the float riders throw to the crowd.)

The other group desperately flees the city. All of the Uptown, high-society crowd goes to Colorado on ski trips. (In fact, so large is the Colorado contingent, that Aspen now has an annual Mardi Gras parade.) The rest of the locals who hate the crowds and the traffic and the juvenile drunkenness head for havens like Gulf Shores, Alabama, or Natchez, Mississippi. We decided to go to Cajun country for some rural Mardi Gras.

Lafayette is less than two hours from New Orleans. We headed straight for Dwight Stroud's Shady Oaks Steak House. The restaurant was closed for lunch, but Mr. Stroud brought us all in and cooked some great steak sandwiches for us once he saw Lance. Shady Oaks is housed in a Butler building in an industrial tract, but it has some amazing steaks and the finest collection of wine in Cajun country. We passed a lively afternoon drinking through several bottles, and listening to Mr. Stroud tell stories, while his son Marty stirred a crawfish bisque using a power drill equipped with a rotor attachment that looked a lot like those gadgets used by wineries for stirring up lees.

That night, we were in Henderson for an incredible feast prepared by Lionel and Peggy Robin at Robin's Restaurant. The crawfish pie was heaven on earth, and the frog legs etoufee would have made any frog proud to participate. Of course, we did some serious wine drinking here. Lionel opened the wine cellar and let us help ourselves 'til we couldn't drink no more.

The next day we went to Le Boucherie in St. Martinville. The whole day is a paean to pork. They butcher pigs and make fresh cracklins and boudin noir. There's pork sausage, pork burgers, pork jambalaya, and pork chili served by the spoonful and poured into bags of Fritos. They have local Cajun music and serve lots of cold beer. Then people sit around and wait for the fights to start. It's a rousing, good party.

A half-hour south of St. Martinville is Charenton, home of Mr. Lester's, a five star restaurant inside the Indian gambling casino. That's where we had dinner. Chili rellenos stuffed with crawfish, crab towers reaching to the chandeliers, dry rubbed pork cops, and tender, juicy steaks poured out of the kitchen trying to keep up with the profusion of wine we were drinking.

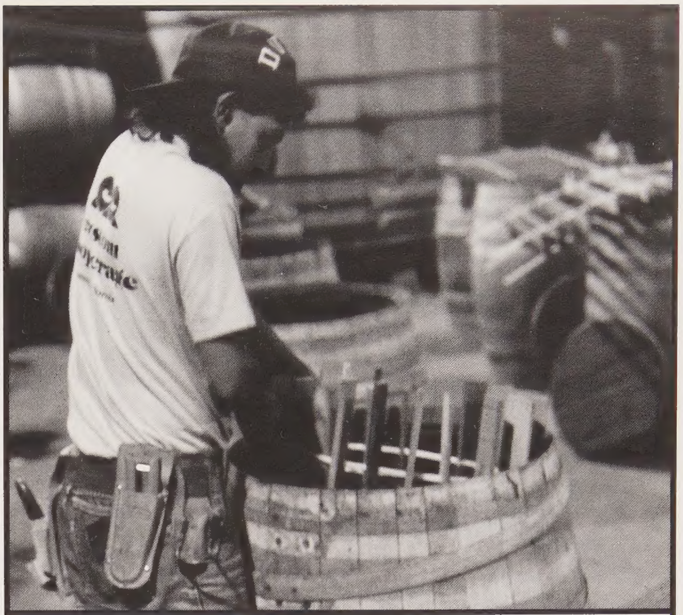
Monday, we grabbed a fantastic plate lunch at Poche's in Breaux Bridge. We went down the street to buy some boudin noir at Bobineaux's. Then we went back to Henderson where Lionel gave us 40 pounds of "select" crawfish. When we got back to the Henry's, we boiled up those crawfish, had a feast, and were ready to face Fat Tuesday.

We watched the Mardi Gras parades in front of Pascal's Manale on Napoleon before it runs into St. Charles. The whole area is filled with local families, lots of kids, and few drunks. We had a grand time. After the truck parade, we went back to the Henry's and had a traditional Mardi Gras dinner: chili dogs.

We spent the next day in preparation for the Waitstaff Ball. Lance Cutler came up with the idea of throwing a party for waiters four years ago. That first party was a smashing success, and each year the party has grown and evolved. The party starts at 11PM, after the dinner shift. Lance brings in food products from Sonoma County and has chefs from New Orleans prepare dishes using those food products.

This year's party featured a thick, delicious ragout made with C.K. Lamb by Cafe Giovanni's Duke LoCicero. Chef Mitch Engleman of the Red Fish Grill turned Muscovey duck breast from Sonoma Foie Gras into tasty towers perched on fried sweet potato. Mark DeFelice from Pascal's Manale worked wonders with Rocky free range chicken from Petaluma Poultry. Fresh salmon from Ocean Beauty Seafoods turned into 35 pounds of incredible salmon tartare in the skilled hands of Horst Pfeifer from Bella Luna restaurant.

Fifteen cases of wine from The Cutler Cellar and Gundlach Bundschu Winery, along with 15 cases of beer from Mendocino Brewing Co. kept the revelers free from thirst, while they danced to the distinctive music of the Executive Steel Band. I don't know how Lance does it, but the whole party is free to waiters. Within an hour, more than 400 waiters have the room rocking, and the energy



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Then, exactly at midnight, the door swings open and in walks Chuy from the Burrito Palace with Dr. Iggy Calamari and 14 other friends from around the U.S. It's a surprise I arranged to celebrate Lance's birthday. The party goes on until 4:30AM. I wouldn't be surprised if those waiters go out and sell some of Lance's wine.

The entire weekend is a bit of a blur. I remember getting on a bus with all the out-of-staters and 30 local friends. We went out to Middendorf's for a fantastic catfish dinner and then onto Hammond for a party in the Crescent Bar. We went drinking all through the French Quarter, and I remember Chuy chugging three of the miniature bottles on display in Tujague's before I could stop him. I remember drinking some great German Spatleses sitting on the steps along the Mississippi River levee.

I'm almost certain there was a brunch at the Henry's that involved pounds and pounds of caviar with cases of champagne. Then the drinking turned serious first to Pinot Noir then to Cabernet and Zinfandel — and before we knew it, dinner was being served.

I'm not sure how I got to the airport, or how I got from San Francisco airport to my home in Sonoma. I have no idea how many days I slept before awakening in my bed and being handed a tequila sunrise by Jakelyn's mother.

Like I said, I'm happy just to be alive. Happy birthday, Lance. ■

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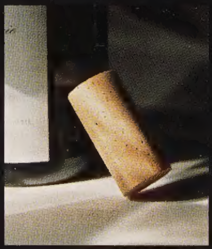

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